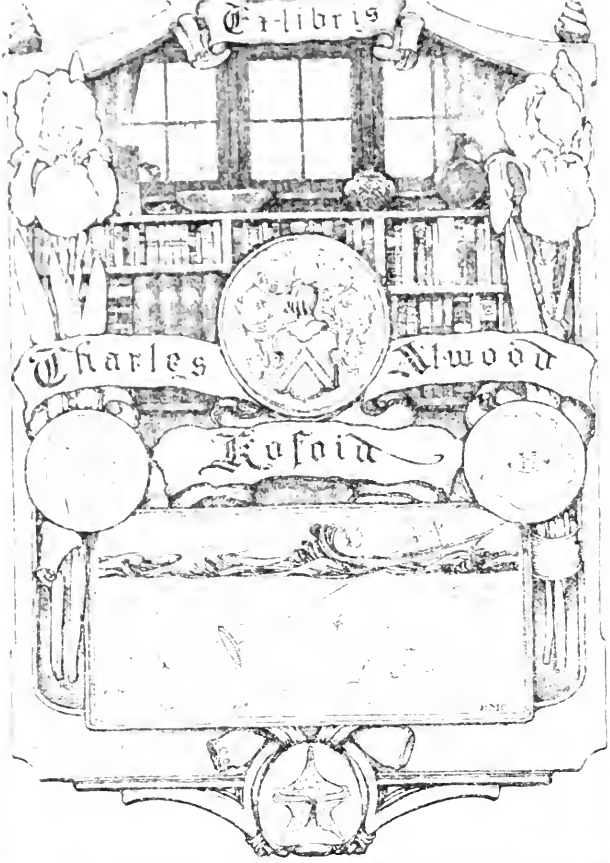

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AN INQUIRY

INTO

THE CAUSE OF NATURAL DEATH,

OR

DEATH FROM OLD AGE.

DEVELOPING A NEW AND CERTAIN METHOD OF PREVENTING THE CONSOLIDATION OR OSSIFICATION OF THE BODY, AND OF THUS INDEFINITELY PROLONGING VIGOROUS, ELASTIC, AND BUOYANT HEALTH;

AND OF

RENDERING PARTURITION EASY AND SAFE.

BY HOMER BOSTWICK, M.D.,

AUTHOR OF "THE FAMILY PHYSICIAN," "HINTS TO YOUNG PHYSICIANS," VARIOUS WORKS ON SEXUAL DISEASES, ETC., ETC., ETC.

"The human frame, as a machine, is perfect,—it contains within itself no marks by which we can possibly predict its decay; it is apparently intended to go on for ever."—*Dr. Monroe's Anatomical Lectures.*

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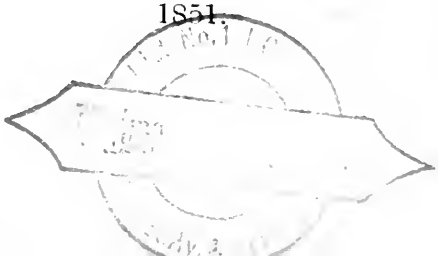

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INTRODUCTION.

The author is fully aware, that in the following pages, conclusions have been arrived at, and practices proposed, startling and opposed to the preconceived opinions of general readers. This consideration, however, has had no influence in the statement of these conclusions, nor in the recommendation of those practices. Truth without mystery, intentional error, or the fear of man, is the motto best suited to this subject, and to serve the public. Everything of a metaphysical or speculative character has been carefully avoided; so that whosoever may feel disposed to raise objections, must do so not in accordance with any whim, prejudice or superstition which may afflict him, but by denying either the truth of the premises, or the legitimacy of the deductions. Let it not be said that the life of man cannot be prolonged to many

times the present period of his existence, because *it is not so*. Dr. Lardner and his dictum of Atlantic Steam Traveling is illustrative of this folly. It does not follow, that because a thing *is not*, or *has not been*, that therefore it cannot be. Yet Prejudice is ever a dead weight dragging at the chariot wheels of Progression. It is crazy with old crotchets and saws, and goes its way mumbling like a poor imbecile with no lightning in its blood. You meet it on the tops of mountains, in valleys, and ancient cities. It is always the same. Antiquated ideas, rotten by the action of time—make up its whole brain and utterance. It is deaf, blind, and to all mighty purpose, dumb as the stones. It can see only in one direction, and lives as it were in an eternal twilight. If a new sun were to burst through the heaven's concave over its head, it would scarcely believe it—or, if it did, what dubious words would it utter? The sun would assuredly be a God's bastard, a false light, deceiving at last the possible senses. Thus, does Prejudice reject all new truths—thus it laughs at all "regenerative schemes."

But there is hope of the world enlarging its creed even in the department of knowledge we are now

treating, as the following paragraph from a weekly paper of large circulation testifies.

"LONGEVITY.—There is nothing in the system of nature which, in our present state of knowledge, appears so unintelligible as the scale of longevity. It must be admitted, indeed, that our knowledge upon this subject is very imperfect; for all that is known of domesticated animals, and the accidental facts which have been preserved concerning others, tend to the strange result, that longevity bears no relation either to strength, size, complexity of organization, or intellectual power. True it is that birds, which seem to rank higher than beasts in the scale of being, are also much longer lived. Thirty is a great age for a horse; dogs usually live only from fourteen years to twenty; but it is known that the goose and the hawk exceed a century. But fish, evidently a lower rank in creation than either, are longer lived than birds; it has been said of some species, and of certain snakes also, that they grow as long as they live, and, as far as we know, live till some accident puts an end to their indefinite term of life. And the toad! It cannot indeed be said that the toad lives forever, but many of these animals who were cased up at the general deluge, are likely to live till they are baked in their cells at the general conflagration."

The individual existence of all organized bodies is temporary; no animal escapes the hard necessity of dying; nor is man exempt from this. The particu-

lar history of each function shows that in the first periods of old age, and often before, the organs become deteriorated; that many completely cease to act; that others are absorbed and disappear; and, lastly, that in decrepitude, life is reduced to a few miserable remnants of the vital, and some of the nutritive functions in an imperfect state. In this condition, the most trifling external cause, the slightest blow or fall, is sufficient to arrest one of the functions indispensable to life, when death invariably follows, as the last degree in the destruction of the organs and functions. But a small number of persons die solely through the effects of age; scarcely one in a million.—*Magendie's Physiology. By Dr. Revere.*

Now comes the question, Has the Creator so ordered this great destruction of human life by causes apparently accidental, or do they occur from the want of knowledge, from carelessness, or from causes which we have been endeavoring to point out? These are questions of vital importance to the whole human family, and if I have been successful in solving some of them, I shall feel myself amply paid in the consciousness of having done a little, while God spared my existence, to benefit and prolong the life of my fellow-man.

HOMER BOSTWICK, M.D., 504 *Broadway.*

THE CAUSE OF NATURAL DEATH.

CHAPTER I.

The Changes in the Body during its Progress from the Womb to the Grave.

The first visible state of a human being, (in embryo,) is a small, globulous, pulpy or jelly-like substance, approaching the nature of albumen or the matter which constitutes the white of an egg. In this pulpy substance, or globule, various particles of more solid matter begin to appear. These particles of matter gradually increase in bulk and density, until they come in contact with each other. These different points of contact are slowly modified into so many joints or hinges; and thus, by degrees, a distinct framework of bone, or skeleton, is formed. During the formation of this bony fabric, the surrounding pulpy matter gradually accumulates, and changes in form, until, at length, that degree of organization is produced which constitutes a fœtus, or child in the womb. This fœtus becomes larger and firmer up to the time of birth, when the state of in-

fancy begins. The same process of consolidation which commences with the first visible state of existence, still continuing, the being passes through the different stages of life, called infancy, childhood, youth, manhood, old age, and decrepitude, to that condition which is termed "NATURAL DEATH." Each of these stages is characterised by an increased degree of hardness and solidity. The bones, tendons, cartilages, ligaments, tissues, membranes, both of a cellular and fibrous nature—the coverings and the very substance of the stomach, liver, lungs, and other organs, gradually increase in density and firmness. The joints become rigid and dry, and begin to grate and crack when they are moved—the synovial fluid, which oils and softens them, being diminished in quantity, and rendered too thick and glutinous to be of much service. The heart, also, and the whole muscular system, as well as the brain, spinal marrow, nerves, eyes, &c., partake of the same consolidating process, and, ultimately, present a firmer, harder and more rigid texture—millions of the minute, or capillary vessels, which ramify, or spread like the branches of a tree, throughout the whole body, gradually choke up and change into solid fibres, no longer pervious to the blood. The larger vessels, both arteries and veins, also become indurated, ossified, contracted in diameter, and diminished in flexibility. The fluids of the body become thick and putrid, and loaded with *earthy* particles. The skin

becomes husky and wrinkled, the hair falls off, the teeth drop out, the movements of the body become awkward, slow, and uncertain, the memory fails, the eyes grow dim, deafness comes on, the nerves of taste, smell, and general feeling or sensation, lose their wonted susceptibility, and thus, the whole system gradually choking up, the circulation slowers, and ultimately ceases altogether. The blood also becomes stationary, thickens or congeals, stagnates in the vessels, and what is called "Natural Death," or "Death from Old Age," is the consequence. The body thus dies little by little—once elastic, healthy, active and lively, keenly sensible of passing events—of the pains and pleasures of the world, it becomes rigid, diseased, feeble, and unconscious—lost to the cares and enjoyments of life, it sinks down, trembles, and totters in its efforts—power and motion gradually diminish—life is extinguished by successive gradations, and death is the last term in the succession. Truly, "In the midst of life we are in death!" We are dying even during the most active periods of our existence!

CHAPTER II.

On the Cause of the Changes which occur in the Body during its Progress to Old Age.

First.—If we analyze the blood of a young animal, it will be found to contain, among other substances, a certain amount of solid matter.

Second.—If the blood of an aged animal, of the same species, be analyzed, it will be found to contain a *much greater* amount of solid matter.

Third.—There is a *much greater* amount of solid matter in the secretions, as milk, urine, fæces, &c., of old than of young animals.

Fourth.—The flesh, liver, cartilage, and other eatable parts of old animals are drier and tougher than corresponding parts of young ones.

Fifth.—The chemical difference in these parts of old and young animals consists only in the greater and less proportions of solid matter.

Sixth.—The bones of a child, or other young animals, are light, spongy, and elastic, while those of an aged animal are heavy, dense, and rigid:—any one can distinguish the bones of a lamb or a calf, for instance, from those of a sheep or an ox, not only by the size, but by the difference in weight, texture, and form.

Seventh.—When analyzed, the bones of young and

aged animals are found to differ greatly in their amount of solid earthy matter. The difference may be represented by the following proportions :—

	Gelatine.	Earthy Solids.	Total.
Bones of a child, lamb, &c.,	3	1	4
" " " Middle-aged person,	2	2	4
" " " Aged person, sheep, or ox,	1	3	4

Here we observe that the proportions of gelatine and earthy solids are entirely reversed in the progress of the animal to maturity and old age. The difference in the nature of the bones of young and old animals may be illustrated by the following experiments :— Dissolve three ounces of common glue, and mix it with one ounce of chalk in fine powder—the compound will be comparatively elastic and yielding, and may represent the bones of a child. Now reverse the proportions, viz., one ounce glue and three ounces chalk, and the mixture will represent the bones of an aged animal, which, being very short and brittle, in consequence of containing so large a quantity of earth, and so little gelatine or glue, to hold it together, the individual is at all times liable to the most serious injuries from fractures and bruises, the least accident, even an ordinary fall, being sometimes sufficient to shake or break him to pieces, like a plaster image. The child, or other young animal, whose bones are little more than masses of cartilage, is on the contrary, so highly flexible, India-rubber-like, that, its limbs yielding in every direction, a thousand

falls and knocks have scarcely more than a momentary effect. The middle-aged person is more solid and brittle than the child, but less so than the aged individual, and we perceive a corresponding difference in proportion to age.

Eighth.—The substance of the brain, spinal marrow, and nerves, is much more solid and resisting in old than in young animals.

Ninth.—When analyzed, the substance of the brain, &c., in old animals, is found to contain a greater amount of solid earthy matter than in young ones.

Tenth.—The substance of the eye partakes of the same consolidating process. In infancy and childhood, the eyes are bright, sparkling, and crystalline, and the sight is quick and powerful. In old age they become dull, lifeless, and glassy, and the power of vision faint and indistinct.

Eleventh.—When the eyes of old and young animals are analyzed, no difference is found but in the proportion of solid matter entering into their composition.

The same may be said of the body at large. The only chemical difference to be found in the body, as a whole, of an aged, enfeebled, decrepit being, and an active, energetic youth, is the amount of solid matter which enters their composition.

Twelfth.—The specific gravity of the *whole body*

of an aged animal, is much greater than the specific gravity of the *whole body* of a young animal.

Thirteenth.—The specific gravity of the various *parts* of the body is much greater in old than in young animals.

These differences in the solidity, weight, texture, flexibility, &c., of the body, at different stages of its existence, evidently arise from the *gradual accumulation of solid, earthy elements, and from no other cause.*

CHAPTER III.

On the Nature of the Solid Earthy Matter, which, by gradually accumulating in the Body, brings on those Changes which terminate in Old Age and Natural Death.

If we take the bones of an animal, and place them in a crucible, in an open fire, and keep them at a red heat until all the carbonaceous and other matter disappears, or until nothing is left but solid gray or white ashes; and, if these ashes are boiled for a short time in distilled water, all the alkaline or other soluble matter will be dissolved by the water, and nothing left but solid earthy matter. Other processes, (but which are too complex for the general reader, and could only be repeated by the adept in Chemistry,) will then determine these earthy ashes to consist of—

	Parts.
Phosphate of Lime, about	50
Carbonate of Lime	10
Sulphate of Lime, sometimes with traces of other earths, as Magnesia, &c.	10
The Gelatine which has been burned away in the crucible, and the saline substances dissolved by the distilled water, will make up the loss, viz.	30
Total,	100

If portions of the flesh or tendon, cartilage, liver, lungs, kidney, or any other part of the body, even the brain and spinal marrow, be subjected to the same process, the same substances will be found, but, of course, in less and variable proportions, according to the state and habits of the animal.

The blood, also, by the same process, will be found to contain the same earthy elements, in proportions varying from 5 to 12 or 14 per cent. Brande, Thompson, and other chemists, give the following composition of blood :—

Water	78.0
Albumen, fibrine, muco-extractive matter, osmazone, an oil, sulphates of potass and soda, phosphates and muriates of soda, and ammonia	12.0
Phosphate of lime, magnesia, and other earthy salts	10.0
Total,	100.0

The coloring matter of blood, when incinerated, according to Brande, affords a residue consisting of :

Oxide of Iron	50.0
Subphosphate of Iron	7.5
Carbonic acid and loss	16.5
Phosphate of lime with magnesia and lime	26.0
Total,	100.0

The urine, (which often deposits an earthy sediment in cooling,) fœces, milk, bile, gastric juice, saliva, synovia, mucus from the nostrils, tears from

the eyes, liquid perspirable matter or sweat from the body, the matter which discharges in fluor albus, gonorrhœa, ulcer abscesses, menstruation, and in procreation, (the *fluid seminales*,) have all been subjected to analysis,* and found to contain more or less of the phosphate of lime, and other earthy compounds.

We have now found that the solid earthy matter which by gradual accumulation in the body, brings on ossification, rigidity, decrepitude, and death, is principally *phosphate of lime*, or bone matter; *carbonate of lime*, or common chalk, and *sulphate of lime*, or plaster of Paris, with, occasionally magnesia, and other earthy substances.

* These results are borne out by the experiments of Brande, Hatchett, Dr. Bostock, and many British as well as continental chemists.

CHAPTER IV.

On the source of the Phosphate of Lime, &c., which by choking up and consolidating the Body produces Old Age and Death.

We have seen that a process of consolidation begins at the earliest period of existence, and continues without interruption until the body is changed from a comparatively fluid, elastic, and energetic state, to a solid, earthy, rigid, inactive condition, which terminates in death,—that infancy, childhood, youth, manhood, old age, and decrepitude, are but so many different conditions of the body or stages of the process of consolidation or ossification—that the only difference in the body between old age and youth, is the greater density, toughness, and rigidity, and the greater proportion of calcareous earthy matter which enters into its composition. The question now arises, what is the *source* of the calcareous earthy matter which thus accumulates in the system? It seems to be regarded as an axiom, that all the solids of the body are continually built up and renewed by the blood. If so, everything which these solids contain is derived from the blood; the solids contain phosphate and carbonate of lime, which are therefore derived from the blood, in which, as already shown, these earthy substances are invariably found to a greater or less extent. The

blood is renewed from the chyle; which is always found, upon analysis, to contain the same earthy substances as the blood and the solids. The chyle is renewed from the chyme; and ultimately, from the food and drink. The food and drink, which nourish the system, must, at the same time, be the *primary source* of the calcareous earthy matter which enters into the composition of the chyme, the chyle, and the blood; and which is ultimately deposited in all the tissues, membranes, vessels, and solids of the body—producing old age, decrepitude, and "NATURAL DEATH." The food and drink, with the earthy choking-up matter they contain, are first *outside*, or *external* to the body; the cause of *obstruction* and *ossification*, and, therefore, of disease, old age, and NATURAL DEATH, is first external to—outside of the body, and is therefore *entirely within our own power and control!*

Having traced the earthy matter which ossifies and chokes up the system, to the food and drink, it becomes of the greatest importance to know what amount of this matter each article of diet contains. The following table exhibits the amount in each of the articles named:—

TABLE OF DIET.

25,000 lbs. of	lbs.
Common table salt contain	500
Maize, or Indian Corn	360

25,000 lbs. of	lbs.
Peppers, Cinamon, Nutmegs, Cloves, Ginger, Coffee, Cocoa, Bark, Sarsaparilla, &c., average	300
Wheat Flour	220 to 300
Beans (field and dried)	206
Beans (fresh from garden)	183
Kidney Beans	150
Rye	140
Oats	118
Rice (according to M. Braconnot)	100
Potatoes	90
Peas	85
Barley	65
Beef, Mutton, Pork, and the flesh of animals and fowls in the adult state generally average	26
Lamb, Veal, and young animals generally average	15
Rice, Arrow-root, Tapioca, and Sago	20
Fish of all kinds, including Shell-fish and Turtle	18
Linseed	17
Beet-root, Parsnips, and Mangle Wurzel	14
Cheese	10
Cabbage, Savoy, Brocoli, Artichokes, Coleworts, Endive, Asparagus, Cauliflowers, and greens in general, average	6
Turnips, Carrots, Onions, Radishes, Cress. Celery, Leeks, Spinage, Small Salading, Lettuces, Parsley, Cucumbers, Rhubarb, Mushrooms, Vegetable Marrows, and herbs and flowers generally, average	2
Eggs of all kinds, average	2
Apples, Pears, Plums, Cherries, Strawberries, Gooseberries, Raspberries, Cranberries, Blackberries, Mulberries, Bilberries, Elderberries, Sloes, or wild Plums, Currants of all kinds, Melons, Olives, Peaches, Apricots, Pine Apples Nectarines, Tamarinds, *Dates* (4),	

	lbs.
25,000 lbs. of Pomegranates, Prunes, Raisins, Figs, Lemons, Limes, Oranges, Shaddocks, Grapes, &c.	1
Honey, Treacle, Sugar, Butter, Oil, Vinegar, Wines, Cider, Perry, and Alcohol, *i. e.* Brandy, Rum, Gin, Whisky, Arrack, &c.	0
Milk (according to the age and state of the animal from which it is taken), from	10 to 20
Spring water (differs according to the depth and the nature of the district from which it is obtained), averages perhaps	10
Rain water, if caught as it falls from the clouds, say in large sheets in the open country	0
Snow and hail obtained in the same manner	0
River and Pit water (contain as much as spring water, besides putrid animal and vegetable matter and other floating or mechanically mixed substances	10
Distilled Water	0
Infusion of Malt and Hops (ale and porter), as well as the decoctions of Tea, Coffee, Cocoa, Chocolate, and also Ginger Beer Pop, Lemonade, Soda Water, &c., if well cleared, contain as much only as the water with which they are made—the earthy particles remaining in the grounds or sediment.	

The above table must be understood to give the general or average proportions only, as it is found by analysis, that no two articles, even of the same species, contain exactly the same amount of solid matter; they differ both in animals and vegetables according to the kind and quantity of aliment, and

the nature of the soil and manure they may have lived upon.

It will be observed from the above table, that articles of diet differ materially in their constituent proportions of calcareous earthy matter. Common table salt, which is used in the preparation of almost every kind of food, and along with many of our meals, contains a fearfully large amount; and is productive of much greater mischief to the animal economy than is generally believed. A very careful examination of the various kinds of salt has been made by a Dr. Henry, the result of whose experiments will be found in the following table, copied from "URE'S CHEMICAL DICTIONARY," ART. SALT.

KINDS OE SALT.	Insoluble Matter	Muriate of Lime	Muriate of Magnesia	Total earthy Muriates	Sulphate of Lime	Sulphate of Magnesia	Total Sulphates	Total Muriates	Pure Muriate of Soda, or Pure Salt.
For Bay Salt.									
St. Ube's	9	Trace	3	3	23½	4½	28	40	960
St. Martin's	12	Do.	3½	3½	19	6	25	40½	959⅓
Oleron	10	Do.	2	2	19½	4½	23¾	35¾	964¼
From Sea Water.									
Scotch (common)	4	..	28	28	15	17½	32½	64½	935½
Scotch (Sunday)	1	..	11½	11½	12	4½	16½	29	971
Lymington (com.)	2	..	11	11	15	35	50	63	937
Do. (Cat)	1	..	5	5	1	5	6	12	988
Cheshire Salt.									
Crusted Rock	10	0.1.16	0.3.16	0.¼	6½	..	6½	16¾	983¼
Fishery	1	0.¼	0.¾	1	11¼	..	11¼	13¼	986¾
Common	1	0.¼	0.¾	1	14½	..	14½	16½	983½
Stoved	1	0.¼	0.¾	1	15½	..	15½	17½	982½

The following table shows the number of bushels of salt inspected since 1840.

1840	2,622,305	1845	3,762,358
1841	3,340,769	1846	3,833,581
1842	2,291,903	1847	3,951,351
1843	3,127,501	1848	4,737,126
1844	4,003,553		

The following table shows the comparative purity of the Onondaga Salt, as compared with the best foreign salt, in 100 parts.

COMPOSITION.	Chloride of Sodium	Sulphate of Lime	Sulphate of Magnesia	Sulphate of Soda	Chloride of Calcium	Chloride of Magnesium	Chloride of Lime	Carbonate of Lime and Magnesia	Insoluble matter
Onondaga Coarse Salt ...	99.100	.700	..	..	.100	..	..	..	..
Onondaga Dairy Salt	97.466	1.799	..	..	..	.082	.038	..	.010
Onondaga Fine, Liverpool	98.899	.877	..	.201	..	..	..	.023	..
Onondaga Coarse, Geddes	99.250	.650	..	..	trace	..	..	.100	..
Turks' Island Salt	98.404	1.316	..	..	..	..	..	.280	..
Cheshire Crushed Rock..	98.325	.650	..	..	.006	.007	..	..	1.000
St. Ube's Bay Salt	96.000	2.350	.450	..	trace	.300	..	..	.900
St. Martin's Bay Salt	95.950	1.900	.600	..	trace	.350	..	..	1.200
Scotch (Common)	93.550	1.500	1.750	..	..	2.800	..	..	.400
Scotch (Sunday)	97.100	1.200	.450	..	..	.150	..	..	.100
Cheshire Fishery	98.675	1.125	..	..	.625	.075	..	..	.100
Lymington (Cat)	98.800	.100	.500	..	..	.500	..	..	.100
Salt Lake, California	97.800	1.120	.240	.230	.610	..	..	..	..

As the preservative qualities of salt depend upon the proportion of Chloride of Sodium in its composition, an inspection of the above table will convince any person capable of being convinced, from the results of chemical analysis, that the salt made in Onondaga County stands first. The specimens selected for analysis, were from a store in Albany, where the salt was for sale.

The following Table is from Pereira on Food and Diet. It shows the Mean Time of Digestion of the different Articles of Diet, naturally, in the Stomach, and artificially in Phials, on a Bath.

The proportion of gastric juice to aliment, in artificial digestion, was generally calculated at one ounce of the former to one drachm of the latter. the bath being kept as near as practicable at the natural temperature, 100° Fahrenheit, with frequent agitation.

ARTICLES OF DIET.	MEAN TIME OF CHYMIFICATION.			
	IN STOMACH.		IN PHIALS.	
	Preparation.	*H. M.*	*Preparation.*	*H. M.*
Rice	Boiled	1		
Pigs' feet, soused	Boiled	1		
Tripe, soused	Boiled	1		
Eggs, whipped	Raw	1 30	Whipped	4
Trout, salmon, fresh	Boiled	1 30	Boiled	3 30
Trout, salmon, fresh	Fried	1 30		
Soup, barley	Boiled	1 30		
Apples, sweet, mellow	Raw	1 30	Masticated	6 45
Venison steak	Broiled	1 35		
Brains, animal	Boiled	1 45	Boiled	4 30
Sago	Boiled	1 45	Boiled	3 15
Tapioca	Boiled	2	Boiled	3 20
Barley	Boiled	2		
Milk	Boiled	2	Boiled	4 15
Liver, beef's, fresh	Broiled	2	Cut fine	6 30
Eggs, fresh	Raw	2	Raw	4 15
Codfish, cured dry	Boiled	2	Boiled	5
Apples, sour, mellow	Raw	2	Masticated	8 30
Cabbage, with vinegar	Raw	2	Shaved	10 15
Milk	Raw	2 15	Raw	4 45
Eggs, fresh	Roasted	2 15		
Turkey, wild	Roasted	2 18		
Turkey, domestic	Boiled	2 25		
Gelatine	Boiled	2 30	Boiled	4 45
Turkey, domestic	Roasted	2 30		
Goose, wild	Roasted	2 30		
Pig, sucking	Roasted	2 30		
Lamb, fresh	Broiled	2 30		
Hash, meat and vegetables	Warmed	2 30		
Beans, pod	Boiled	2 30		
Cake, sponge	Baked	2 30	Broken	6 16
Parsnips	Boiled	2 30	Mashed	6 45
Potatoes, Irish	Roasted	2 30		
Potatoes, Irish	Baked	2 30		
Cabbage, head	Raw	2 30	Masticated	12 30
Spinal marrow, animal	Boiled	2 40	Boiled	5 25
Chicken, full grown	Fricasseed	2 45		
Custard,	Baked	2 45	Baked	6 30
Beef, with salt only,	Boiled	2 45		9 30

ARTICLES OF DIET.	MEAN TIME OF CHYMIFICATION.			
	IN STOMACH.		IN PHIALS.	
	Preparation.	*H. M*	*Preparation.*	*H. M.*
Apples, sour, hard	Raw	2 50	Entire pieces	18
Oysters, fresh	Raw	2 55	Raw, entire	7 30
Eggs, fresh	Soft boiled	3	Soft boiled	6 30
Bass, striped, fresh	Broiled	3		
Beef, fresh, lean, rare	Roasted	3	Roasted	
Beefsteak	Broiled	3	Masticated	8 15
Pork, recently salted	Raw	3	Raw	8 30
Pork, recently salted	Stewed	3		
Mutton, fresh	Broiled	3	Masticated	6 45
Mutton, fresh	Boiled	3		
Soup, bean	Boiled	3		
Chicken soup	Boiled	3		
Aponeurosis	Boiled	3	Boiled	6 30
Dumpling, apple	Boiled	3		
Cake, corn	Baked	3		
Oysters, fresh	Roasted	3 15		
Pork, recently salted	Broiled	3 15		
Porksteak	Broiled	3 15		
Mutton, fresh	Roasted	3 15		
Bread, corn	Baked	3 15		
Carrot, orange	Boiled	3 15	Mashed	6 15
Sausage, fresh	Broiled	3 20		
Flounder, fresh,	Fried	3 30		
Catfish, fresh	Fried	3 30		
Oysters, fresh	Stewed	3 30	Stewed	8 25
Beef, fresh, lean, dry	Roasted	3 30	Roasted	7 45
Beef, with mustard, &c	Boiled	3 30		
Butter	Melted	3 30		
Cheese, old, strong	Raw	3 30	Masticated	7 15
Soup, mutton	Boiled	3 30		
Oyster soup	Boiled	3 30		
Bread, wheat, fresh	Baked	3 30	Masticated	4 30
Turnips, flat	Boiled	3 30		
Potatoes, Irish	Boiled	3 30	Mashed	8 30
Eggs, fresh	Hard Boiled	3 30	Hard boiled	8
Eggs, fresh	Fried	3 30		
Green corn and beans	Boiled	3 45		
Beets	Boiled	3 45		
Salmons, salted	Boiled	4	Boiled	7 45
Beef	Fried	4		12 30
Veal, fresh	Broiled	4		
Fowls, domestic	Boiled	4	Masticated	6 30
Fowls, domestic	Roasted	4		
Ducks, domestic	Roasted	4		
Soup, beef, vegetables, and bread	Boiled	4		
Heart, animal	Fried	4	Entire piece	13 30
Beef, old, hard, salted	Boiled	4 15		
Pork, recently salted	Fried	4 15		
Soup, marrow bones	Boiled	4 15		
Cartilage	Boiled	4 15	Masticated	10

ARTICLES OF DIET.	MEAN TIME OF CHYMIFICATION.			
	IN STOMACH.		IN PHIALS.	
	Preparation.	*H. M.*	*Preparation.*	*H. M.*
Pork, recently salted	Boiled	4 30	Masticated	6 30
Veal, fresh	Fried	4 30		
Ducks, wild	Roasted	4 30		
Suet, mutton	Boiled	4 30	Divided	10
Pork, fat and lean	Roasted	5 15		
Tendon	Boiled	5 30	Masticated	12 45
Suet, beef, fresh	Boiled	5 30	Entire piece	12
Beefsteak	Broiled		Cut fine	8
Beefsteak	Raw		Cut fine	8 15
Beef	Boiled		Entire piece	9
Mutton, fresh	Broiled		Unmasticated	8 30
Cream			Raw	25 30
Cheese, old, strong			Entire piece	18
Cheese, new, mild			Divided	8 30
Oil, olive			Raw	60
Tendon			Entire piece	24
Cartilage			Divided	12
Bone, beef's solid			Entire piece	80
Bone, hog's, solid			Entire piece	80
Parsnips	Boiled		Entire piece	13 15
Parsnips	Raw		Entire piece	18
Carrot, orange			Entire piece	12 30
Carrot, orange	Raw		Raw	17 15
Potatoes, Irish			Entire piece	14
Cabbage	Boiled	4 30	Boiled	20
Peach, mellow			Cut small	10
Peach, mellow			Mashed	6

Many elaborate articles, by "learned philosophers," have been written to account for the *declared* absolute necessity for the use of salt in carrying on the functions of the body. But this supposed necessity for the use of salt is merely one of the *theories* of the day to account for the different phenomena connected with organization and life. Such a theory is not founded in fact. Whole nations of powerful, active persons are known to have subsisted without even the knowledge of salt. The Author knows

many individuals who have lived without salt for years, not only without disadvantage, but with beneficial results. Of course, persons who have been in the habit of consuming salt very freely, might suffer evil by suddenly abandoning its use, just as they might by any other sudden change of habits;—but if the change is made *by degrees*, and the old articles of diet *gradually* removed by the substitution of new ones, such changes may be wrought in the body *without injury* as would appear at first sight incredible.

Bread, from wheaten flour, when considered in relation to the amount of *nutritious matter* it contains, may with justice be called the "STAFF OF LIFE:" but in regard to the amount of *earthy matter*, we may with equal justice pronounce it the "STAFF OF DEATH!" Wheat differs considerably in the amount of earthy ingredients it contains, according to the nature of the soil and manure it is grown from. That grown upon chalk soils contains much more than such produced upon soils of a different nature. When the farmer puts lime and bone dust upon his fields, he is unconsciously supplying us, through the medium of his crops, with an *increased amount of obstructing, choking-up and death-producing matter*. For as the rains descend, the lime is gradually dissolved, the roots absorb the fluid holding the earthy matter in solution, which matter is then carried and deposited into the substance of the plant or vegetable. Not only is wheaten flour highly charged with

calcareous earth in its *natural* state, but it is often shamefully adulterated by the *artificial* introduction of earthy substances—such as ground chalk, whiting, gypsum, plaster of Paris, powdered granite, slacked lime, bone ashes, and similar compounds. In using flour, therefore, of any form; bread or pastry of any kind, we probably consume many other injurious articles—for what care unprincipled millers or speculators whether the articles of trade are obtained from the bones of a butcher's store or even the charnel house! It has been proved very lately in England, in a court of justice, that large quantities of flour had been mixed with gypsum at the rate of fifteen per cent! Besides the earthy substances already mentioned, there is a large amount of fine sand unavoidably mixed with flour, arising from the friction or rubbing together of the millstones. In a work entitled the "History of Inventions," it is calculated that in the quantity of flour and bread a person consumes, he swallows six pounds of sand every year! Flour and bread are also farther adulterated with ground peas, beans, potatoes, alum, ammonia, and subcarbonate of potash—but these are harmless compared to the dreadful effects of the foregoing earthy substances. The use of these various pernicious substitutes for flour being found to have an astringent or constipating effect on the bowels, it soon became necessary to counteract this, and thus to prevent suspicion, the use of *jalap* and other cathartic

ingredients was introduced, in order to prevent discovery, and produce a laxative or purgative effect upon the unfortunate consumers.

In addition to the mischievous ingredients which are *purposely* mixed up with the flour and bread, there is a great deal of filthy, pernicious matter *accidentally* or *carelessly* introduced. In the store and warehouses, for instance, where the corn is hoarded up, it becomes contaminated with the dust of the rooms, with the urine and fœces of rats and mice, which, when the corn is removed for consumption, is all ground up together. In the bakehouse, too, it is not a very uncommon thing to see a man with scabbed and ulcerated arms and hands mixing up the bread; others again using snuff and tobacco, as they lean over the troughs and benches, and the snuffy mucus and tobacco secretions are sent somewhere. In the large establishments for making bread, the bakers knead the paste with their feet in a large trough, working and treading it like mortar. A baker declares on his veracity that it is not unusual for men who have been walking about in shoes for several hours, and whose feet have acquired an intolerable stench, to jump at once into the paste without even drying themselves. *One instance* the Author has seen in New York, in a bakery, even worse than above described, but to describe it would be disgusting. Now and then we find in the bread purchased from a baker's, a well-cooked cricket or black beetle,

which insects abound in bakehouses. To enumerate all the filth and deleterious articles combined in artificially prepared food and drink, would not only be tiresome, but loathsome. We may justly declare, that there is little wisdom in the well—no truth in liquids—bread turns out to be a crutch to help us onward to the grave, instead of being the staff of life—in almost everything poison, and in scarcely any medicine cure! Devoted to disease by baker, grocer, wine-merchant, spirit-dealer, pastry-cook, confectioner, &c., the physician is called to our assistance; but here again the pernicious system of fraud, as it has given the blow, steps in to defeat the remedy—even the physician's prescription is adulterated! No skill can prevent the effects of daily poisoning; and no man can prolong his life beyond a short standard, where every meat ought to have its counteracting medicine.

"Adulterations of Food and Seasonings.—A druggist in London has written and published a letter to a member of Parliament, stating that almost every drug and necessary of life is adulterated to an enormous extent, before offered for sale in the market. As to the drugs, let them pass; but the culinary preparations we cannot so easily excuse. The genuine West India cayenne pepper is now made in London, and if it contained nothing but the ground berry of the piper indica, selected of a good color, the writer says he should desire no better. But co-

lored saw-dust, salt, vermilion, and other ingredients, are added. Ginger is often adulterated with flour and meal, flavored with capsicum, to give it the requisite warmth. Mustard seed to the amount of one-sixth only, and in many kinds not near so much as that, enters into the composition of the best Durham mustard, which is Durham only in name, colored up with turmeric, and spiced with capsicum. Black pepper is mixed with starch, powder, and English arrow root, to make white pepper. Coffee is mixed with the burnt root of the dandelion, known as chicory, which, from its being ground at the mills, is liable to adulteration. Chocolate and cocoa are mixed with ground sago, often itself unfit for sale in any other state.

"The roguery and deception practiced on the public is truly alarming. It is high time that an effort be made to detect fraud and imposition. We have known an object of pity to be arrested for stealing a mite of bread to eat and brought before a court of *justice* and receive a sentence of one calendar month's imprisonment. But it appears to be fashionable now-a-days to have a class of respectable rogues—moneyed rogues—who consider themselves too honorable to steal, but at the same time they will cheat like a rogue. All is done in a business-like manner, and therefore is but a business transaction. If my neighbor wants a pound of pepper, and a half pound of logwood saw-dust can be introdu-

ced into it without detection, it is considered a fair business transaction to cheat my neighbor of half a pound of pepper! Yes; and you would be respected should you derive wealth under such circumstances. A petty rogue is one who has not the means of roguing largely—a respectable one is he who has the wealth and rogues to the amount of thousands. The latter class of rogues are seldom found in prisons—they are generally in mansions of the greatest splendor and taste.

"We entertain an opinion that professional roguery, as well as all other kinds of roguery, is successful in proportion to the general intelligence of the people. Ignorance is the result of imposition as well as fraud. Give the people light, and those who live on the spoils of suffering humanity will cease their avocations, and apply themselves to some honorable profession."—*London Beacon.*

With regard to other grains, we find them all, except maize, or Indian corn, containing less earth than wheat. Barley, for instance, only contains one-third the amount of wheat; and the use of barley bread and barley flour generally would certainly conduce to health, and add many years to the usual term of life. Rice and sago, arrow-root and tapioca, contain still less than barley, and ought to enter freely into the list of articles of diet.

The constituents of wheat and other grains may

be gathered from the following tables, from *Ure's Chemical Dictionary*.

According to Dr. Proust, one hundred parts of wheat flour contain

Yellow Resin	1.0
Gummy and saccharine extract	12.0
Gluten	12.5
Starch	74.5
Total,	100.0

In two different specimens of wheat, Vogel found the following ingredients and proportions :—

	1st specimen.	2d specimen.
Fecula (Starch)	68.0	72.0
Undried Gluten	24.0	22.0
Gummy Sugar	5.0	5.5
Vegetable Albumen	1.5	0.5
Some Earthy Phosphates and other Salts.		

Sir Humphrey Davy drew as the general result of his experiments, that the wheat grown in the southern provinces of Europe and America contains more gluten than that of the northern.

Beans, such as our horse bean, have been analyzed by Einhoff. He found 3840 parts to consist of—

Volatile matter	600
Skins	386
Fibrous starchy matter	610
Starch	1312
Amount forward	2908

Brought up	2908
Vegeto-animal matter	417
Albumen	31
Extractive, soluble in alcohol	136
Gummy matter	177
Earthy phosphate	37½
Loss	133½
Total,	3840

Fourcroy and Vaquelin found incinerated ashes to contain the *phosphates of lime*, magnesia, potash, and iron, with uncombined potash. They found no sugar in this bean.

Kidney beans, yielded to Einhoff:—

Skins,	288
Fibrous, starchy matter,	425
Starch,	1380
Vegeto-animal matter,	799
Extractive,	131
Albumen, some vegeto-animal matter,	52
Mucilage,	744
Loss,	21
Total,	3840

According to Einhoff's analysis of beans, 3,840 parts contain 37½ of *earthy matter*. This amount would be equal to 241 lbs. in 25,000 lbs., instead of 206 as given in table at page 9.

Rye consists, according to Einhoff, in 3,840 parts of:—

Envelope (husk),	930
Moisture,	390
Flour (farina),	2520
Total,	3840

The farina consists of :—

Albumen,	126
Undried gluten,	364
Mucilage,	426
Starch,	2345
Sugar,	126
Husk or bran,	245
Loss,	208
Total,	3840

Oats analyzed, gave :—

Fecula,	59.00
Albumen,	4.30
Gum,	2.50
Sugar and bitter principle,	8.25
Fat oil,	2.00
Some salts	
Total,	78.06

These results differ from those of Sir. H. Davy, who found oats to contain six per cent. of gluten.

Potatoes contain in every 100 parts, according to Einhoff :—

Starchy matter,	22.0
Albumen and mucilage,	5.4
Total,	27.4

The nutriment equals one-fourth the weight.

Peas contain, according to Einhoff:—

Volatile matter,	540
Starch,	1265
Vegeto-animal matter,	559
Albumen,	66
Sugar,	81
Mucilage,	249
Fibrous starchy matter,	840
Salts (earthy and alkaline),	11
Loss,	229
Total,	3840

Barley. M. Proust has given the following as the constituents of this grain :—

Yellow resin, soluble in alcohol,	1
Gummy and saccharine extract,	9
Gluten,	3
Starch,	32
Hordeine,	55
Total,	100

The analysis of Barley by Dr. Thompson, gave :—

Gum,	5
Sugar,	4
Gluten,	3
Starch,	88
Total,	100

And of Malt, gave :—

Gum,	14
Sugar,	16
Gluten,	1
Starch,	69
Total,	100

It seems that what Dr. Thompson regarded as starch was found by M. Proust to be a compound of starch and what he called hordeine. The hordeine and starch of Proust amount to 87 per cent., and the starch of Thompson to 88 per cent.

"Flesh, the muscles of animals, consists chiefly of fibrin, with albumen, gelatine, extractive, phosphate of soda, phosphate of ammonia, *phosphate and carbonate of lime*, and sulphate of potash."—*Ure's Dic.*

It may be useful to know that the principal part of earthy matter in flesh exists in the muscle or lean, the fat containing a very small amount. The following table is from *Brande's Chemistry.*

One hundred parts of muscle or lean, of—

	Water.	Albumen or Fibrine.	Gelatine.	Total nutritious matter.
Beef contains	74	20	6	26
Veal	75	19	6	25
Mutton	71	22	7	29
Pork	76	19	5	24
Chicken	73	20	7	27
Cod-fish	79	14	7	21
Haddock	81	13	5	18
Sole	79	15	6	21

Rice. The following are the results of M. Braconnot's analysis of the rice of Carolina and Piedmont:

	Carolina.	Piedmont.
Water, ...	5.00	7.00
Starch, ...	85.07	3.80
Parenchyma, ...	4.80	4.80
Amount forward,	94.87	15.60

Brought up,	94.87	15.60
Vegeto-animal matter,	3.60	3.60
Uncrystallizable sugar,	0.29	0.05
Gummy matter,	0.71	0.10
Oil,	0.13	0.25
Phosphate of lime,	0.40	0.40
Total,	100.00	100.00

With traces, in the Carolina rice, of muriate and phosphate of potash, acetic and vegetable calcareous salt, vegetable potash salt, and sulphur.

According to Vogel, rice is composed of:—

Starch,	96
Sugar,	1
Fat oil,	1.5
Albumen,	0.2

With some salts.

Fish contains rather less albumen and gelatine than flesh. Fish of various kinds have been found to contain free phosphorus; hence in a putrid or decomposing state they are often found to shine in the dark with a blue phosphorescent light. Oysters and other shell fish have been found to contain, besides phosphorus, according to some chemists, a small amount of iodine.

Linseed contains a considerable amount of oily and mucilaginous matter. Beet root, parsnips, and mangel-wurzel, contain a large proportion of saccharine matter. Brande states, "that one hundred pounds of beet-root furnish between four and five pounds of purified white sugar, besides a quantity of syrup."

These roots might be used as articles of diet to great advantage. They are far more suitable to the proper nourishment of the body than potatoes, and much cheaper.

Cheese contains a small proportion of earthy matter, and is very nutricious. It bears a strong resemblance to the gluten of wheat, and may be eaten to great advantage with fruits and fresh garden vegetables, but should never be taken with bread. The latter combination is very dry and indigestible.

Cabbage and greens in general abound in albumen, or white of egg matter, and contain a small amount of *earths*.

Turnips, carrots, &c., contain a small proportion of earth, with starch and saccharine matter.

Mushrooms contain *phosphates of lime* and sometimes *iron*.

Onions, examined by MM. Vaqueline and Fourcroy, were found composed of:—

1. A white, acrid, volatile and odorous oil.
2. Sulphur combined with oil, which makes it fetid.
3. A large quantity of uncrystallizable sugar.
4. A large quantity of mucilage, like gum arabic.
5. A vegeto-animal matter, coagulable by heat, and like gluten.
6. *Phosphoric acid, combined with lime*, and acetic acid.
7. A portion of *citrate of lime*.
8. A tender fibrous matter.

Eggs consist of the shell, a lining membrane, the white and the yolk. The white consists of albumen,

combined with traces of sulphur and soda. The yolk also contains albumen, with an oily matter, some coloring substance, and phosphorus, with a *trace* of *phosphate* of *lime*.

The white and yolk are very nutritious; but the yolks of eggs alone beat up with sugar and warm water are exceedingly strengthening; and on account of the phosphorus, may be used in all cases of debility, where there are no inflammatory symptoms, with great advantage.

Ripe fruits in general, as given in a previous table, consist of the following elements and average proportions, according to a French chemist, M. Berard.

Vegetable albumen,	0.44
Coloring matter,	0.10
Lignin,	1.40
Gum,	3.45
Sugar,	16.50
Malic, citric, tartaric, and oxalic acids,	1.10
Lime,	0.01
Water,	77.00
Total,	100.00

The date contains a larger amount of earth than any other fruit, and the grape the least. The latter is generally free from earth, sometimes only a mere trace is found. Grapes, therefore, are very conducive to health, not only in consequence of being free from earthy matter, but they possess the power of thinning the blood and gently stimulating it, and

causing it to be sent through all the countless capillary vessels. And those who have never observed the fact, will be surprised to be told the aged whose hands and other parts of the body are very much dried up, will rapidly become soft, and the little vessels that have for years been closed, will reappear, as also will the fine vessels of the cheeks again put on the hue of youth; the appetite will improve, the bowels will become regular, elasticity of limb and a more buoyant spirit are sure to follow those who eat plentifully of good grapes. The old man will again become young!

Honey is composed of sugar, mannila, mucilage, and acid, and sometimes by the essential oil of the plants from which it is gathered by the bees. In some parts of Asia, and America, the honey is sometimes of a poisonous nature, in consequence of the bees feeding upon poisonous flowers.

"Sugar is one of the constituents of a number of vegetables, and is produced sometimes by animals, as in the disease called diabetes, and may be obtained from animal glue by the action of sulphuric acid and water."—*Annals of Chemistry.*

It is obtained from the ordinary sugar-cane, maple, birch, wheat, parsnips, mangel-wurzel, beet, carrot, figs, grapes, mushrooms, gelatine, starch, sawdust, hemp, flax and linen rags. Persons unacquainted with chemistry may feel surprise when told that 100 parts of starch will produce 110 parts of sugar,

merely by being boiled in oil of vitriol and water; that a pound of sawdust or linen shreds will produce more than a pound of saccharine matter. It is nevertheless known to be true by the practical chemist.

Molasses, or treacle, is that portion of the juice of the cane which during the manufacture of sugar, does not crystallize. It differs somewhat from sugar in its composition, but is equally as good for domestic purposes, where taste and habit form no consideration.

It is a very prevalent opinion that sugar, or any sweet or saccharine substance, is injurious to the health generally, and particularly to the teeth, causing their decay, and producing toothache. Such an opinion is only true under certain circumstances; when a person has not been accustomed to its use, and when it is held long in the mouth, as in the form of candy or boiled sugar, and when the system is laboring under some kinds of disease. It is hurtful, for instance, to bilious, hypochondriacal, and dyspeptic habits. But persons in health, whether children or adults, beginning to use it sparingly, and gradually increasing it as the stomach becomes modified to its use, will find it a most powerful article of nourishment. It is a fact, that in countries where sugar is much used, scurvy, and other cutaneous diseases, are almost unknown. Vessels, where the seamen are allowed the use of sugar at pleasure, are generally pretty healthy, and if it were more generally used at

sea, the health of sailors would be materially improved.

Negroes, notwithstanding their increased labor, become greatly improved in health during the sugar cane harvest, or crop time; and this is attributable solely to their fondness for the saccharine juice of the cane. The same may be said of horses, cows and pigs; they are all fond of the refuse syrup about the sugar works, and become fat at this season, and much improved in the appearance of their skins. Horses fed upon boiled carrots, in a few weeks become remarkably sleek, their coats shine like silk, and their general activity is much promoted, which is owing to the saccharine matter contained in the carrots. Dogs afflicted with the "mange," a kind of scurvy, have, when all other means failed, been perfectly cured by licking refuse syrup. A sheep, afflicted with a foul disorder, was also placed near a sugar establishment, and recovered.

As an antiseptic or preservative, saccharine matter is an invaluable article. Meat, well rubbed with sugar, instead of salt, has been known to keep for a long period. Beef has been kept perfectly sweet and sound for above two years, by being simply covered to a few inches' depth in treacle. In this way fruits have been preserved in their natural state without the ordinary and troublesome method of boiling and potting them. All that is requisite for this purpose is, to gather such fruits as are ripe and dry,

and the skins unbroken, to place them carefully in a deep mug or jar, and pour some treacle over them to the depth of several inches. In this way the treacle prevents the action of the air, gathers round each fruit, suspends it, and keeps them from crushing and spoiling each other. When required for use, carefully rinse them in lukewarm water, and fresh ripe fruits of any kind may thus be had at any season of the year.

Sugar and molasses have been said also not only to equal any other article as a general manure, but for some purposes to be superior to anything else.

Sugar, therefore, taken as an article of diet, either in the solid or fluid form, is highly nutritious and beneficial.

Butter is the oily part of milk, and is much used as an article of food. Although it is considered an animal product, consisting of *butyrine*, *oleine*, *stearine*, and *butryic acid*, some vegetables yield a substance very analogous to it. "In the interior of Africa, there is a tree much resembling the American oak, producing a nut in appearance very like an olive. The kernel of this nut by boiling in water, affords a kind of butter, which is whiter, firmer, and of a richer flavor than that made from cow's milk, and keeps well without salt. The natives call it *shea toulou*, or tree-butter. Large quantities of it are made every year."—*Ure*. Butter of cocoa and palm oil are other vegetable specimens. The

milk of sheep produces the greatest proportion of butter; after the sheep, the goat and the cow give the largest amount.

"Parmentier could not make any butter from woman's, asses or mare's milk; and that from sheep he found always remained soft. From their general properties he divided them into two classes, one abounding in serous and saline parts, which includes woman's, mare's and asses'; the other rich in caseous and butyraceous parts, which are cow's, goat's and sheep's."—*Ure*.

Oil for eating, is generally the olive oil, and consists of carbon 77.21, hydrogen 13.36, and oxygen 9.43, in every 100 parts; or according to Craconnot, of a greenish yellowish oil 12, and a very white suet 28 parts in the 100.

Common wine vinegar consists of acetic acid, water, mucilage, tartaric acid, tartrate of potassa, sugar, extractive, citric, malic, and phosphoric acids.

Distilled vinegar consists only of acetic acid and water; all the other ingredients being separated by the process of distillation.

The moderate use of vinegar as a condiment promotes digestion, urges the flow of the urine, and increases the insensible perspiration.

Wine of the grape consists of water, alcohol, bitartrate of potassa, or tartar, extractive matter, a volatile oil, malic and tartaric acids, and in that spe-

cies called champagne, a large quantity of almost free carbonic acid gas.

Taken moderately, wine promotes digestion, gently stimulates the whole system, and improves the circulation of blood in the arteries. Taken to excess, (that is, to produce inebriety,) it produces debility, stupor, nausea, and diarrhœa. When new, it is flatulent, purgative, debilitating, and sooner intoxicates; but when good and of a proper age, it is nutritive and strengthening.

Cider and perry may be called the wine of apples and pears; being the expressed juice of these fruits slightly altered by fermentation, and may be classed amongst the most wholesome drinks.

Rum is the spirit obtained from the juice of the sugar-cane, and is highly impregnated with the essential oil of that plant.

Brandy is, or should be, the spirit obtained by distillation from wine, or the fermented juice of the grape.

Gin ought to be common malt spirit, rectified or redistilled from juniper berries.

Whisky is distilled from wheat, oats, rye, barley, potatoes, or other vegetable substance, and often from the washings of ale and porter barrels.

Arrack is a spirituous liquor made chiefly at Batavia, Goa, East Indies, &c., from rice.

All these different spirituous drinks are but so many varieties of alcohol, which is a powerful and diffusi-

ble stimulant. It is highly useful when greatly diluted, as an excitant application in cases of extreme debility; but when undiluted, is capable of producing the most fearful effects upon the human constitution.

Dr. Thompson, in his *Materia Medica*, speaking of alcohol, says, "In examining the effects which follow the introduction of a large quantity of moderately diluted alcohol into the stomach, we find that the first is the local excitement of the viscus, indicated by a sensation of heat in it, an effect, the result chiefly of the impression of the alcohol on the gastric nerves, increasing the sensibility of that organ; this impression is next conveyed to the brain, spinal marrow, and entire nervous system; ideas of unusual brilliancy pass through the mind; there is, as it has been beautifully expressed, a soft tumult of the soul; fancy is awakened, and creates, from uninterrupted associations, new combinations and a world of its own; and it is at this moment, between sobriety and intoxication, that the poet sometimes pours forth his sublimest conceptions and most harmonious strains. As the power of the stimulus, however, increases, all control of the will is suspended; the ideas are then irregular, and, instead of being combined in such a manner as to produce even agreeable conceptions, they arise in the most incongruous order; the extent of the excitement of the cerebro-spinal centers becomes apparent in the unusual vivacity of the

eye, the swelling of the veins of the neck, and the beating of the carotids; but new symptoms indicating cephalic congestion quickly follow; namely, pain in the frontal region; the head drops upon the chest; the eyes lose their expression and are half closed; the physiognomy is altered and vacant; the voluntary muscles cease to act; the arms are pendant, or their movements are irregular; the legs cross one another in the effort to walk; vertigo supervenes, and delirium follows. The exhausting influence of such a state is too great to continue; in a short time collapse, and sleep resembling that of apoplexy, follow. Under certain states of the habit, this sleep may prove the prelude to death, but, in the majority of instances, nature adopts this method of restoring the exhausted excitability; yet he does not wake in his usual state; his hand is tremulous; his limbs are weak and unsteady; his surface is susceptible of the slightest impressions; his stomach nauseates all kinds of food; his thoughts are gloomy; his temper irascible; and, if the moral principle be not blunted by the frequent repetition of this vice, his mind is overpowered with the most distressing sense of degradation."

Although alcoholic beverages, when moderately used, may be of service to the body, especially in cases of extreme debility, still when we consider the vast amount of wretchednesss which follow in the wake of their constant use, we may justly decide, that

society on the *whole* would be benefited by thei total abandonment.

Milk, according to Berzelius, and consists of:—

Water,	928.75
Curd, with a little cream,	28.00
Sugar of milk,	35.00
Muriate of potash,	1.70
Phosphate of potash,	0.25
Lactic acid, acetate of potash, lactate of iron,	6.00
Earthy phosphates,	0.30
Total,	1000.00

Cream consists of:—

Whey,	92.0
Butter,	4.5
Cheese,	3.5
Total,	100.0

"Milk, Oh! Oh! Oh! Milk!—Some recent accounts of the milky ways of the London milkmen have filled us with the desire to have the good old days of chalk and water back again. We knew that under the old system our insides were simply white-washed with a clean if not a very wholesome preparation; but we shudder at the thought of what the London milk is now declared to be. It is said that the rich creamy look of the mixture is obtained by the use of starch, sugar of lead, and brains. Oh! that we could 'dash out our desperate brains' from our milk-jugs, and imbibe the thinnest of decoctions the pump and chalk-pit ever contributed!

We might not object to a dash of starch to enable us to get what might be termed a stiff glass of milk—but there is something so awful in the idea of brains, particularly as it is said they come from the knacker's yard, that our own brain reels, swims, and performs various other cerebral eccentricities that we know not how to describe. We feel almost resolved to forswear the lacteal liquid altogether, and take for our motto, as a direction to our children, '*Lac Milk.*'" —*Punch.*

A very simple method has been discovered of preserving milk for any length of time. It consists in gently simmering the milk in shallow pans until the whole of the water is evaporated, and the solid contents of the milk left in a dry powder. This powder may then be packed in canisters or bottles, and kept perfectly dry. When required for use, all that is necessary is, to take a spoonful of the powder and mix it well in a mortar with a small quantity of lukewarm water, gradually adding as much more water as will give it the consistency and color, as it will be found to have the taste and flavor, of good new milk. This plan should be taken advantage of by all taking long land journeys or sea voyages, and thus avoid some of the inconveniences attending the deprivation of certain diets.

In large towns milk is adulterated to an incredible extent. The most common, and the most harmless of all adulterations is that of simply thinning with water, but the expert in this "art" use the yolk of

eggs, flour and warm water. Sometimes molasses and salt is used. Other scientific "milk artists" manufacture it by a solution of annato with subcarbonate of potash and a little sugar. Cream is often "increased" in quantity by starch, rice powder, and arrow-root boiled together. Milk is sometimes put into leaden vessels to make it throw up a larger quantity of cream, and the leaden particles which impregnate the milk, have been known, in England, to produce the most fearful disorders. Those guilty of this practice would murder openly if they dared. Read the following :—

DISEASED MILK AND MEAT.

A Memorial to the Board of Health of the City of New York :

GENTLEMEN :—I pray you to take into serious consideration, the several matters set forth in this memorial :

There is a power and responsibility vested in your hands at the present moment, as far greater than that which attaches to ordinary legislation, as health and life are superior in consequence to houses and lands. It is the power over, and responsibility for, the sanitary condition of our city, so far as this may be controlled by circumstances which are subject to your authority. And what circumstances are there, affecting the public health, over which the law and the people will not unite, to give you most ample powers of correction ? We are threatened by a destructive epidemic, from the stroke of which no one of our five hundred thousand inhabitants is exempt. It is a common danger ; and though not now of an alarming character, it may become so by the neglect

even of small things, or by what may produce equivalent results without devolving censure upon you—and that is, by want of information. No task can be more difficult than that of acquiring accurate knowledge of all the means by which the public health is endangered. The observation of the private citizen in his daily walks, must come to the aid of the public officer in his official visits. In fact, every man must constitute himself a civil officer of inspection in whatever concerns the general health, precisely on the grounds, and for the same reason, that he would give the alarm on the approach of an armed enemy from without.

I beg leave to claim your attention to the matters which I shall now recite:

On Thursday of last week I had occasion to walk through Fifteenth street to the North river. When I had passed the Ninth avenue, my olfactory nerves were shocked in the most extraordinary manner. A stench, such as it would be difficult to imagine and impossible to describe, filled the air, and absolutely interfered with free respiration. I found it to proceed from the extensive cow stables attached to the distillery of one of the wealthiest of our citizens. From near the Ninth avenue to the river, I observed long low sheds, occupying the entire space between Fifteenth and Sixteenth streets. But for the intolerable stench, I might have supposed them to be manufactories of some sort, with which that portion of the city abounds. There was an exterior appearance of cleanliness about the premises. Many of the fences were whitewashed, and there was no visible ac-

cumulation of filth, yet the stench was most oppressive to the lungs.

I resolved on a closer inspection, and approached the windows. Each shed was occupied by cows stalled close together, from eight to ten in a row, arranged crosswise, and standing back to back, so near that a man might with difficulty pass sinuously between them. The stables were floored and guttered, so that the liquid would run off; and they appeared to be as free from any accumulation of filth as the nature of the case admitted—but the stench was horrible! I wondered how the poor animals themselves could live in that confined atmosphere. They were each tied by a short rope to the trough; and I was informed they are never taken out, after being once stalled, until they cease to give milk, or become sick, when they are sold to the butcher! The troughs are branches of a main duct or trunk, connecting them with the distillery, from which they receive the smoking swill that makes their chief food. This trunk passes by on the Tenth avenue, crossing it by iron pipes under ground, and supplies the sheds that extend thence to the river. The whole number of cows kept here must be little short of two thousand! (2,000.)

I began to reflect on the relations of this extensive establishment with the general health of the city. The milk must of necessity be filthy and unwholesome. If we take an average of 8 quarts only per day for each cow, there must be near 16,000 quarts distributed through the city every day; and if we suppose, what is probably a fact, that each quart is partaken of by five persons, we have eighty thousand (80,000) consumers of this un-

wholesome fluid, who are supplied from this single establishment. There are others of the same kind in the suburbs of the city, Brooklyn and Williamsburgh ; and it will be quite safe to estimate the total number of persons to whom this vile stuff is distributed, at two hundred thousand (200,000). It may be said that the quantity taken by each is too small to be very injurious to the health : but when we consider that the dose is repeated every day throughout the year, and that milk constitutes the chief article of food for thousands of infants, I think there is cause to fear that a wide-spread predisposition to disease must be created by it.

The following conversation which I had with several respectable laboring men who lived in the vicinity of the distillery, will serve to enlighten the consumers as to the quality of the article which is so extensively distributed under the name of milk.

Q. Are not these cows liable to disease from being confined so closely, and fed on swill ?

A. That, indeed, they are, sir. If you will take the trouble to look into the lots opposite to the stables, you may see from two to six of them staggering about, and ready to drop dead. Sometimes six of them will die in a single day.

Q. Do they continue to milk them after they are turned out to die ?

A. Yes, sir. I have seen them do it frequently. I have seen them when they were so exhausted as to be unable to stand long enough to be milked, and one man would hold them up while another would milk them.

Q. Do they really sell that milk through the city ?

A. Yes, sir. They carry it round to their customers every day under the name of Westchester County, or Orange County milk. It is a very common thing for country milkmen to bring their cans into the city half full, and fill up at this establishment.

Q. What becomes of these sick cows which you speak of? Do they recover?

A. I believe not a single case of recovery has been known. They appear to die of consumption. Many have been examined after death, and the lungs are always found to be badly diseased. When they stop milking, the butcher gets them.

Q. Is it possible that those diseased animals are sold for beef through the city?

A. Why, sir, that is no secret! They are carried off to some slaughter-house during the night; or they are taken out of town and cut up, and then brought back to the butcher shops.

This was the substance of our conversation. I observed with care, from a short distance, five of the poor animals who were lying down in one of the lots. They were literally in a dying state. One lay extended at full length, unable to hold up its head. Another seemed to be gasping for breath. A man went into the lot with a bundle of hay and offered it to one of them; but she would not or could not eat it. He kicked her until she made several attempts to get up, but fell back on her haunches. At last, he succeeded in making her stand by giving her the help of his own shoulder.

I passed the place on my return homeward, at dusk, and the five cows were still there. To satisfy myself of

the truth of what I had learned about their removal during the night, I repaired to the spot at sunrise next morning, and three of the five were gone—no doubt to the slaughter-house!

Is not this a most serious matter, calling for the prompt interference of the civil authorities? We are continually admonished by physicians to be careful of our diet, if we wish to escape the cholera. The approaches of the disease are said to be almost insensible to the patient. Men pursue their regular business for two or three days after it has commenced its fatal ravages upon the system. A very slight disturbance of the digestive organs—"the slightest," say the Doctors, "must be promptly treated, or the attack may prove fatal." They advise the rejection of raw vegetables, such as salad and radishes, from the table. How much more is *the milk and meat of diseased animals* to be guarded against!

Gentlemen of the Board of Health: It is hereby respectfully and earnestly submitted to you, that the present condition of the city is such as to call for your immediate action on the subject of this memorial. If any doubt exist in your own minds, relative to the danger that may threaten the public health from the source here indicated, let a council of our principal physicians be summoned to your assistance. If you need enlightenment as to the stench that proceeds from the stables herein mentioned, call upon respectable citizens residing in their vicinity. If you wish ocular and olfactory demonstration, visit the establishment in person, and I am persuaded you will bear out the assertion that its charac-

ter and its uses forbid the possibility of its being anything but *a foul and dangerous nuisance that ought to be forthwith removed*.

Permit me also to suggest that an Ordinance be passed, requiring every milk-cart to be labeled in fair legible letters, with the name of the owner and his residence. Also, creating a Meat Inspection, such as might be a safeguard against diseased animal food being exposed for sale. Every slaughter-house and butcher-shop and stall should be under strict inspection. Public slaughter-houses might be provided, out of the city, and subjected to legal supervision. With respect to animal food it is scarcely possible to be too stringent.

That you may take these various points into serious consideration, is the prayer, on behalf of the people, of

A CITIZEN.

Spring water contains an amount of earthy ingredients which it is fearful to contemplate. It certainly differs very much in different districts and at various depths; but it has been calculated that water of an average quality contains so much carbonate and other compounds of lime, that a person drinking an average quantity each day, will, in forty years, have taken into the body as much as would form a pillar of solid chalk or marble, as large as a good sized man. Is it any wonder, then, that so many are afflicted with stone or gravel in the bladder? Does this fact not prove most conclusively, that all earthy formations of the bladder have their

origin in the water and food of man? These facts immediately point out the way to remedy the evil. Those who wish to avoid the terrible consequences of stone in the bladder, and those who are already thus afflicted, must look well to their diet. When we ascertain the true cause of disease, the remedy becomes evident. So great is the amount of lime in spring water, that the quantity taken daily, would alone be sufficient to choke up the system, so as to bring on old age and death long before we arrived at twenty years of age, were it not for the kidneys and other secreting organs throwing it off in large quantities. These organs, however, only discharge a *portion* of this matter—for instance: supposing ten parts to be taken during a day; eight or nine may be thrown out, and one or two left somewhere in the body. This process continued day after day, and year after year, the solid matter at length accumulates, until the activity and flexibility of childhood become lost in the enfeebled rigidity of what is then called, though very erroneously, "Old age." A familiar instance of earthy deposition and incrustation from *water*, is observed in the common tea-kettle, or steam boiler. Every housewife knows that a vessel which is in constant use will soon become "furred up," or plastered on the bottom or sides with a hard stony substance. Four or five pounds weight of this matter have been known to collect in twelve months. The reader must not mislead himself by thinking that

because so much lime is found in a tea-kettle, the water after boiling is free from lime! It is true that boiling water does cause a little carbonate of lime to precipitate, but the bulk of the sediment is left from that portion of the water *only* which is driven off as steam, or "boiled away." This can easily be ascertained by testing the water both before and after boiling. It will be found to contain earthy particles however long the boiling may continue. Filtering it is of little use; for this only removes what may be floating or mechanically mixed in the water; whereas the earthy matter here spoken of is held in solution. So that spring water, clear and transparent as it may appear, is nevertheless charged with a considerable amount of solid choking-up matter, and is therefore, in any form unfit, or at least is not the best suited for internal use. The only means whereby it can be rendered perfectly pure and fit for unlimited consumption is distillation. A very simple apparatus might be attached to a kitchen fire so as to be of very little trouble, and yet gradually to distil as much water as would be required for a family. There cannot be a doubt that distilling the water intended for tea, coffee, soup, or other internal purposes, even without any other change in diet, would diminish disease, and add many years to our existence. Who will try it?

A good substitute for distilled water may be had in rain, snow or hail. If a large sheet were sus-

pended by the four corners in an open yard or field, and a stone or other weight placed in the center, so as to give it the form of a funnel, the rain or melted snow would run to the center, and might be caught in any vessel for the purpose. This would almost equal in purity distilled water. If this cannot be done, clear rain water filtered might be used, although it is liable to become charged with earthy substances in passing over the house-tops.

River and pit water, besides containing as much lime as that from springs, is contaminated with putrid animal and vegetable matter. Professor Clark says, that the inhabitants of London use forty millions of gallons of the Thames water every day; and that this quantity of water contains about 25 tons of chalk!

The following table shows the solid contents of the Thames water, London, and of the Croton water in the city of New York. The former was analyzed by R. Phillips, Esq., as reported from the Select Committee of the House of Lords. The latter was analyzed by Dr. J. R. Chilton.

Quantity of Water, 1 Gallon=10 lbs. Avoirdupois, at 620° Fahrenheit, or 70 quarters, Avoirdupois.	Thames Water.		Croton Water.	
	Brentford, source of the Grand Junction Water Works Company.	Chelsea, source of the Water Works Company.	At its source, Croton Lake.	In the city of New York, as it issues from the pipes.
	Grains.	Grains.	Grains.	Grains.
Carbonate of Lime	16.000	16.500	1.42	1.52
Sulphate of Lime, Chloride of Sodium	3.400	2.900	....	.44
Oxide of Iron, Silica, Magnesia, Carbonaceous Matter	very minute portions.	Ditto.	.34	.46
Chloride of Magnesium, Chloride of Calcium	....	....	.86	.90
Carbonate of Magnesia	....	....	.70	.84
Solid Matter held in Solution	19.400	19.400	2.98	3.70
Mechanical Impurity	0.368	0.238	.34	.46
Total Solid Matter	19.768	19.638	3.32	4.16

Analysis of the Croton and Schuylkill waters, by J. C. Booth, Professor of Chemistry to the Franklin Institute of Pennsylvania, and H. M. Boye, of Philadelphia.

	Croton Water.		Schuylkill Water.	
	In 100 parts.	grs. in 1 gall.	In 100 parts.	grs. in 1 gall.
Carbonate of Lime	45.86	2.293	53.67	2.190
Carbonate of Magnesia	18.78	.939	11.87	.484
Alkaline Carbonates	16.57	.828	4.53	.185
Alkaline Chlorides	3.87	.193	3.75	.153
Oxide of Iron	2.21	.110	....	....
Silica	7.18	.359	9.68	.395
Organic Matter	5.53	.276	.088	.036
Alumina and Oxide of Iron	....	....	1.88	.077
Alkaline Sulphates	....	....	13.74	.560
	100.00	4.998	100.00	4.080

The Croton water was taken from the Croton dam, and when perfectly clear was found, as appears by the above analysis, to contain 4.998 or about 5 grains of solid matter to the gallon. The Schuylkill water was taken from the middle basin on Fair Mount, and contained 4.08 grains of solid matter to the gallon. The Croton differs from the Schuylkill water in containing a larger amount of the alkaline carbonates, and of the carbonate of magnesia, while it contains less carbonate of lime, and is entirely destitute of the alkaline sulphates, of which the Schuylkill contains 13.74 parts in 100 of the total solid matter, though amounting to only one-half a grain to the gallon.

It appears from the above table, that the amount of impurities contained in the Thames water, exceeds those of the Croton by nearly six fold, and that the quantity of lime, held in solution in the former, surpasses that of the latter, about fifteen times. The Thames water differs also from the Croton in the circumstance that it contains an appreciable quantity of chloride of sodium, or *common salt*—of which the Croton is entirely free.

There are but very few streams to be found, whose waters contain less than 4.16 grains of solid matter to the gallon.

Very much more might be said about waters, which would be very interesting, but would be out of place in this volume. Enough has been shown to convince

the most incredulous that all waters differ in their composition, and that man, as well as all animals, suffers more or less from drinking their impurities.*

Water which contains no volatile matter, when passed through the still is the purest state of this important fluid. It is beautifully transparent, colorless, perfectly void of taste and smell, and lighter than any other water. It feels softer to the touch, and the fingers are instantly wetted with it. Another singular property it possesses is, that it produces a greater sound when poured from one vessel to another. If kept free from the access of matters floating in the air, time produces no change in it. It

* In a trial at Nottingham, England, in 1836, it was proved that dysentery of an aggravated form was caused in cattle by the use of water contaminated with putrescent vegetable matter, produced by the refuse of a starch manufactory. The fish, perch, pike, roach, dace, &c., and frogs in the pond through which the brook ran, were destroyed, and all the animals which drank of the water became seriously ill, and many of them died with the symptoms of dysentery. It was, moreover, shown, that the animals sometimes refused to drink the water; that the mortality was in proportion to the quantity of starch made at different times; and that subsequently, when the putrescent matter was not allowed to pass into the brook, but was conveyed to a river at some distance, the fish and frogs began to return, and the mortality ceased among the cattle. There are many instances on record, where troops and individuals have sickened and died of putrid fever and dysentery, from drinking the water of stagnant pools and ditches or rivers, as the river Lee, near Cork, (Ireland,) which in passing through the city, receives the contents of the sewers from the houses, and is otherwise unwholesome.—*Illustrations of the Croton Aqueduct.* By F. B. Tower. *Appendix.* By C. A. Lee.

is the best solvent of all soluble animal and vegetable matter, without decomposing them; on which account, could it be procured easily, it would be the best and most wholesome beverage that could be employed, and might be rendered sufficiently palatable by agitating it mechanically with the air, which it rapidly imbibes.

CHAPTER V.

Proofs that the Calcareous Earthy Matter of the body is derived solely from the food and drink.

The following is a simple illustration of the influence of food in producing or preventing osseous formations. One thousand parts of egg shells are composed of :—

Carbonate of lime, ...	896
Phosphate of lime, ...	57
Gluten and moisture, ...	47
Total,	1000

If fowls are kept in a state of confinement where they cannot get any calcareous earth, they lay their eggs without shells.

In this case it is evident that if no lime is put into the body, through the medium of food, *no lime will generate* by any peculiar action of that body. Again, if the leg of a fowl be broken, its eggs will be laid *without shells* until the fracture be repaired. It would seem that the earthy matter and gelatine which would have formed the egg-shell are required to mend the broken limb ; and the body has *no power to generate an extra quantity.* The same has been observed of females, both of the human race and of

the lower animals. When limbs have been broken during pregnancy, the young have been born with a *marked deficiency in the structure of the bones.* The earthy elements required to reunite the broken limbs have been taken from the amount already existing in the system of the mother; and that system has had no power to form a fresh supply for the bones of the young.

Dr. Playfair, in a lecture delivered in England in 1843, after describing a series of experiments by himself, with a view to ascertaining the quantities of butter and cheese produced in the milk of cows by different kinds of food, makes the following remarks:—"The cow was now treated to various kinds of food, such as hay, boiled potatoes, oatmeal, beans, peas, &c., and the changes which these articles of food occasioned were carefully determined by analyzing the milk morning and evening. Beans were found very materially to increase the quantity of cheese in the milk, and it is very singular that beans contain cheese exactly identical with that which is procured from milk. Potatoes were found to increase the butter of the milk, and diminish the cheese; and the butter was still more increased when the cow was made to drink beer instead of water. Thus the food and the exercise of the animal was shown to exercise very material influence on the composition of the milk. *The quantity of the earth, of bones and other salts also varied accord-*

ing to the amount of these ingredients presented in the food." This last assertion fully corroborates the conclusion insisted on; namely, that according to the greater or less amount of earthy matter taken in the food and drink, will the body consolidate more or less rapidly in a given time.

It has been stated, by several continental chemists and physiologists, that arterial blood contains a greater amount of crassamentum, and is heavier than venous blood. The crassamentum is the solid part of blood, and consists of coloring matter, fibrin, *phosphate of lime*, &c. If, then, the blood which flows from the heart, through the arterial vessels, contains an amount of solid matter which does not exist in it when returning to the heart through the veins, it is certain that some portion of this matter must be left in the minute terminations of the arterial vessels. The arterial blood is renewed and receives a fresh supply of elements, including the earthy matter from the food.

There are many places where the spring-water is so very hard, (which quality of hardness is owing to the amount of sulphate of lime and other earthy substances,) that many persons are unable to live but a few days, without suffering greatly from gravel and other calculous disorders. It is stated by Dr. Thompson in his *Materia Medica*, "That the abundance of sulphate of lime in the water of Paris, and in the waters of many parts of Switzerland, produces

uncomfortable feelings to strangers who first visit these places. It is also said to produce calculous complaints in the inhabitants. In weak and irritable stomachs hard spring water causes an uneasy sensation of weight at the stomach, and when long used as a daily beverage, produces dyspepsia, and to which we must attribute the calculous deposits which Dr. Percival and others have observed to be common when hard water is drunk." Again, continuing his remarks on water as an aliment, he observes, "No water which contains so much foreign matter as to place it within the class of mineral waters, can be employed as an ordinary diluent; and even hard or well-water, when daily used, proves injurious. This fact is well known to horse jockeys, who, when they are desirous to sell a horse to advantage, give him either rain water, or water which has been boiled, for drink; well knowing that *the use of hard water makes his coat rough*." In these cases we have at least instances of the influence of drink containing earthy matter, increasing the formation of calculi, and even affecting the skin. *These effects do not arise unless the earthy substances are taken into the body with the drink.*

Three common fowls were fed fourteen days upon a mixture of equal parts of wheat, oats, and barley, with hard spring water to drink. The amount of earthy matter in these four articles is represented in the table of diet, by the numbers respectively, 220,

118, and 10; the average of which is 91. In the fourteen days the number of eggs from the whole was 28. The shells from which weighed one ounce, two drachms, one scruple, and fifteen grains, or 635 grains. The shells were then analyzed and found to contain 93 per cent. of earthy matter—of gelatine and water, only 7 per cent. The same fowls were then fed fourteen days upon cooked potatoes, greens, fish, and flesh, about equal parts, with filtered rain-water to drink. The numbers representing these articles are, potatoes 90, greens 6, fish 18, flesh 26, and rain-water 0—the average of which is 28. In the fourteen days the number of eggs was 27. The shells from which weighed seven drachms and a half, or 460 grains—which for 28 eggs would be 477 grains, being a difference of 158 grains, or one-fourth less. The shells were analyzed and found to contain 82 per cent. earthy salts, and 18 per cent. gelatine and water, being a difference of 11 per cent. in the amount of earth, and 11 per cent in the amount of gelatine, &c. These results will be more clearly perceived by giving them in a tabular form.

Kind of Food.	Amount of earth in each.	Average amount.	Period of Feeding.	No. of Eggs.	Weight of Shells.	Composition.	
						Earthy Matter.	Gelatin & Watr.
Wheat	220					per cent	per cent
Oats	118						
Barley	65	91	14 days	28	635 grs.	93	7
Hard or Spring Water.....	10						
Potatoes.....	90						
Greens	6						
Fish	18	28	14 days	27	460 grs. or for 28 eggs 477 grs.	82	18
Flesh	26						
Rain Water ..	0						

The fowls were then fed as at first, and a corresponding difference was again found in the character of the shells.

A dog, that had always lived in the ordinary way, on bread, bones, meat, &c., was bled, and the blood analyzed. It was found to contain 14 per cent. of phosphate and carbonate of lime—the urine 1.5 per cent.—and the excrements 2.75 per cent. The dog was then fed fourteen days on flesh, potatoes, fruits, (of which it was very fond,) and distilled water. The blood was then found to contain 9 per cent. of phosphate and carbonate of lime—the urine .75 per cent., and the excrements 1.5 per cent., being a diminution of 5 per cent. in the blood, .75 in the urine, and 1.25 in the excrements. At the end of this period the dog was fed in the ordinary way for a month, the blood was then found to contain 12.5 per cent., the urine 1.25, and the excrements 2.25 per cent., being an increase again of 3.5 in the blood, .5 in the urine, and .75 in the excrements.

A horse was freely fed upon oats, beans, meal, hay, and spring water for several months. The blood was found to contain 10 per cent. of calcareous earth, the urine 1.25—the excrements 4.5. It was then fed upon clover, grass, and such other fresh vegetable matters as are generally mixed with them, with a small portion of corn and filtered rain water to drink for a month. The blood was found to contain 7 per cent. of earthy matter, the urine .75 per cent.,

and the excrements 2.5 per cent. ; being a decrease in the blood of 3 per cent., .5 in the urine, and 2 per cent. in the excrements.

The following tables, by Professor Liebig, may be useful as bearing upon the present subject.

TABLE I.

Food consumed by a horse in 24 hours.

Articles of Food.	Weight in the Fresh State.	Weight in the Dry State.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Salts and Earthy Matters.
Hay	7500	6465	2961.0	323.2	2502.0	97.0	581.8
Oats	2270	1927	977.0	123.3	707.2	42.4	77.1
Water ..	16000	.....	.....	.....	.....	.....	13.3
Total ...	25770	8392	3938.0	446.5	3209.2	139.4	672.2

TABLE II.

Excretions of a horse in 24 hours.

Excretions.	Weight in the Fresh State.	Weight in the Dry State.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Salts & Earthy Matters.
Urine	1330	302	108.7	11.5	34.1	37.8	109.9
Excrements ..	14250	3525	1364.4	179.8	1328.9	77.6	574.6
Total	15580	3827	1472.9	191.3	1363.0	115.4	684.5
Total from the last Table	25770	8392	3938.0	446.5	3209.2	139.4	672.2
Difference....	10190	4565	2465.1	255.2	1846.2	24.0	12.3
More or less..	less	less	less	less	less	less	more

TABLE III.

Food consumed by a cow in 24 hours.

Articles in Food.	Weight in the Fresh State.	Weight in the Dry State.	Carbon.	Hydrogen.	Oxygeo.	Nitrogen.	Salts & Earthy Matters.
Potatoes.....	15000	4170	1839.0	241.9	1830.6	50.0	208.5
After-grass...	7500	6315	2974.4	353.6	2204.0	151.5	631.5
Water	60000	.....	.....	.....	.....	.....	50.0
Total	82500	10485	4813.4	595.5	4034.6	201.5	898.0

TABLE IV.

Excretions of a cow in 24 hours.

Excretions.	Weight in the Fresh State	Weight in the Dry State.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Salts & Earthy Matters.
Excrements ..	28413	4004.0	1712.0	208 0	1508.0	92.0	480.0
Urine	8200	960.8	261.4	25.0	253.7	36.5	384.2
Milk.....	8539	1150.6	628.2	99.0	321.0	46.0	56.4
Total	45152	6111.4	2601 6	332.0	2082.7	174.5	920.6
Total from the last Table	82500	10485.0	4813.4	595.5	4034.6	201.5	889.0
Difference....	37348	4374.6	2211.8	263.5	1951.9	27.0	31.6
More or less..	less	less	less	less	less	less	more

It appears from the above tables that the salts and earthy matters in the urine of the horse, amounted to 109.9 parts out of 1.330, or above 8 per cent. The excrements 574.6 parts out of 14.250, or about 4 per cent. The salts and earthy matters in the urine of the cow, amounted to 384.2 parts out of 8.200, or above 4.5 per cent. Those of the excrements amounted to 480 parts out of 28.413, or above

1.5 per cent. The milk contained 56.4 parts out of 8.539, or about 0.65 per cent. The total weight of food consumed by the horse was 25.770 grammes. The total amount of salts and earthy matter in that food was 672.2 grammes, or 2.6 per cent. The total amount of urine and excrements was 15.580—the total weight of earthy matter, salts, &c., 684.5, or 4 per cent. The earthy salts, &c., in the food of the cow amounted to about 1 per cent. The total in the whole of the excrements, urine and milk, was 2 per cent.; so that the secretions of the horse, living on hay, oats and water, contained double the amount of earthy matters, &c., to those of the cow, living on potatoes, after-grass and water.

A man who had always lived as the mass of men generally live, upon bread, puddings, potatoes, fish, flesh, cheese, milk, tea, coffee, ale, &c., was induced to submit to several experiments for some weeks. First, the urine voided every morning was preserved, and carefully analyzed; the amount of earthy matter was found to be 3.5 per cent.—excrement 6 per cent.—saliva 1.5 per cent., and the blood 8 per cent. He then lived upon flesh, fish, greens, and a large quantity of ripe fruits, for a fortnight. The urine *then* was found to contain only 2 per cent.; excrement 4 per cent.; saliva 0.75 per cent.; and the blood only 5 per cent. He was then induced to run until he perspired very profusely, when as much sweat was scraped from his body as sufficed for ana-

lyzation, though not enough to be weighed. This was done both before and after change of diet, and a very sensible difference was found in the amount of earthy salts. The sweat obtained before the change of diet contained considerably more than that obtained *after* the experiment. The man was then allowed to return to his old habits and food—and at the end of a month the secretions and blood were again analyzed, and found to contain a much greater quantity of calcareous matter than when last examined; but not quite so much as they contained previous to the experimental mode of living.

The following very striking experiment was tried upon a female, and her child only three months old: a portion of the milk of the mother was obtained sufficient for analyzation, and found to contain about 1.75 per cent. of phosphate and carbonate of lime. She then lived upon bread, tea, coffee, flesh, potatoes and pastries. A portion of the food and stools of the child were obtained every day for six days—when on being analyzed, the urine contained 0.5 per cent. of earthy matter, and the stools 2 per cent. The mother was then induced to live, for a week or seven days, upon sago, puddings, roasted apples, well sweetened, grapes, figs, and port and sherry wines. At the end of the fifth day, a portion of the milk was examined and found to contain 0.5 per cent.; the urine and stools contained only a trace of earthy matter. The mother then quickly retook to her

usual food, having found the change for a week rather a severe task. In about a fortnight the excretions of the child and the mother's milk were again examined, and the proportions of earthy elements had greatly increased, nearly to the amount found on the first analysis.

We are convinced that the degree of solidity and bulk of the bones of a child, *previous* to birth, must depend upon the amount of calcareous or osseous matter in the food of the mother, taken during gestation; and that the process of fœtal ossification might be so far retarded, that a more elastic, yielding, or India-rubber condition of the child might be secured, and the mother be relieved from much of the sufferings and dangers now attendant upon child-bearing. Especially is such a view impressed upon us, by the fact that in various countries and parts of the world, the females are comparatively free from the evils attending those of Europe and North America. "Stevenson's Twenty Years' Residence in South America," relates that "Among the Arancanian Indians of South America, a mother, immediately on her delivery, takes her child, and going down to the nearest stream of water, washes herself and it, and returns to the usual labors of her station." Many accounts have been given of these and the females of other tribes requiring no more than ten or fifteen minutes for all purposes connected with their delivery. These easy births have generally been ac-

counted for on the supposition of their being favored in physical structure and climate; but this idea is expressly denied by Professor Lawrence, in his Lectures on Physiology, who states, "The very easy labors of negresses, aboriginal Americans, and other women in the savage state, have been often noticed by travelers. *This point is not explicable by any prerogatives of physical formation, for the pelvis is rather SMALLER in these dark-colored races than in the European and other white people.*" That they are not favored by climate is evident from the fact, that the females of the North American tribes have as easy labors as those of the Central and South American. In this country, also, and in England, cases have occurred where females who have generally suffered severely, have occasionally given birth with such ease as to surprise both themselves and friends. A case occurred to our own knowledge, but a few years ago. A lady who had given birth to four children, suffered from the two first and the fourth, all the danger and difficulties usually attending parturition, while the third was born with the greatest ease. It was quite fresh in the memories of her friends, that from an early period, and during the whole time of gestation of the third child, she was excessively fond of oranges, limes and lemons, which she took in such abundance that she required but very little other food. Her desire for these fruits was so very great that, although the husband remon-

strated, and friends advised her to leave them off lest she should injure herself, she continued to live almost entirely upon them. To her own and her friends' surprise, however, she gave birth to a fine child with so much ease and safety, that notwithstanding the supposed impropriety of so doing, she was able to resume her ordinary duties in a few days afterwards. During her first, second and fourth periods of gestation, she lived in the ordinary way.

PART SECOND.

CHAPTER VI.

Additional proofs that the calcareous Earthy Matter of the Body is derived solely from the Food and Drink.

"The wise man eats with his brain, the fool with his mouth."

In the month of January, 1841, a female in London was induced to try an experiment to assuage the sufferings during her anticipated labor. She had indeed endured considerable agony on two former occasions, and was now a third time full seven months advanced in gestation. She commenced by eating an apple or an orange, or both, morning and night. This was continued until she found she could take more without inconvenience. Then her food consisted chiefly of roasted apples, fresh animal food, green vegetables, some potatoes, sago, milk, a *little* bread and butter, *very little* coffee or tea, *and no pastries*. She continued this course about six weeks, when to her surprise and satisfaction, her legs and feet, which, when she began, were swelled and painful, and the veins, which were so large, full, and ready to burst, had returned to their former state, and

she became altogether as active and light as previous to her pregnancy. Her spirits were as active and cheerful as her body was buoyant, and she had no complaint of any kind up to the night of her delivery. At twelve o'clock on the evening of March 3d, the surgeon was sent for, the delivery was safely and easily effected, and at one o'clock he had left the room. Had she not been influenced by custom, she might have resumed her duties the next day. But prejudices and notions of propriety must be complied with.

This experiment completely proved the truth of the conclusion, that in proportion as a female subsists during gestation upon aliment free from calcareous earthy matter, will she retard the consolidation of the child, and thus prevent pain and danger in the delivery. Hence the following may be given as an axiom for the guidance of females at these particular times. *The more ripe fruits, and the less of other kinds of food, but particularly of bread or pastry of any kind, they consume during pregnancy, the less difficulty will they have in labor.*

"It is a remarkable fact that, though phosphate of lime is always found in the urine of adults, this salt is not evacuated by infants. The rapid formation of the bones, in the first periods of life, requires that there should be no waste of any of the phosphoric salts."—*Parke's Chemical Catechism.*

The infant not having lived long, has not consumed

much food, and what it has taken being required to complete the formation of the bones, cannot leave much for the secretions. But in the urine, &c., of the adult, who, by living longer, has deposited more earthy matter in the body, and the bony fabric being completed, it is found in considerable quantities ; and in still greater proportion in the secretions of aged persons.

The flesh of animals, in proportion to the age, and therefore, the amount of food and earthy matter which has been taken in, becomes dry and solid—approaching more to the nature of cartilage and bone. In very old animals, a great portion of the tendons is converted into cartilage, the cartilage into bone ; and the bones, now become solid and brittle, constitute by far the greatest part of the body. Hence the emaciated, fleshless, death-like condition, presented by extreme old age.

The urine of a female when pregnant, contains *less earthy matter* than when she is not so. It is no doubt taken up in the formation of the bones of the fœtus.

As age advances, or rather, as the consolidation of the body increases, the composition of the teeth gradually changes :—the amount of earthy matter increasing, and the gelatine, or animal glue, diminishing. The following table is from *Brande's Chemistry*.

Roots of the Teeth :—

Phosphate of lime,	58
Carbonate of lime,	4
Cartilage,	28
Water and loss,	10
Total,	100

First Teeth of Children :—

Phosphate of lime,	62
Carbonate of lime,	8
Cartilage,	20
Water and loss,	10
Total,	100

Teeth of Adults :—

Phosphate of lime,	64
Carbonate of lime,	6
Cartilage,	20
Water and loss,	10
Total,	100

Enamel of the Teeth :—

Phosphate of lime,	78
Carbonate of lime,	6
Gelatine (or cartilage),	16
Total,	100

Sometimes the amount of earthy matter becomes so great, and the cartilage or gelatine which holds it together so little, that the teeth, even in youth, will begin to crumble and wear away like a piece of chalk; and this very often without the individual feeling

much pain. Persons thus affected, will always be found great consumers of bread, puddings, pies, and other flour preparations, all of which contain a large amount of phosphate of lime. By a course of diet of a different nature, several persons have succeeded in arresting the progress of decay, and fixing the remaining teeth more firmly in the gums.

The broken limbs of old people do not unite so readily as those of children, and persons in the prime of life—because in advanced age, although there is more bony matter in the system, the vessels which should convey it to the wounded part being obstructed, the union cannot take place.

The periods called puberty and maturity, are simply conditions or states of the body, the developments of which depend on certain degrees of arterial ossification.* Both which may be brought on sooner

* I have in my possession a beautiful specimen of ossification of the arteries, which I obtained from a man whom I dissected while a student. The ossification commenced in the Primitive Iliacs where they leave the Aorta, involving the Internal, External, Femoral, Circumflex, Profunda, and the entire arteries and all their branches to their extremities. The arteries of the upper extremities were also ossified, and the ascending veins from the feet up to the knee joint. One of these rare specimens I gave to Dr. Mott, who looked upon it, as not only rare, but treasures it with great care as the only specimen of the kind he ever saw. I have never seen before or since, nor have I ever read any account of, the ossification of the veins. I understood Dr. Mott to say, that while he was listening to some European Lecturer, (the name I have forgotten,) he spoke of having seen such a specimen. The man in whom I found this wonderful ossification was a sailor, and I under-

or later, according to the intensity of the consolidating, or choking-up, process. It is possible to force a child through the various stages of life, much earlier than usual; or to delay them for any extraordinary period, by simply regulating the amount of solid matter in the food. Children, when overworked, as in many instances in this country and in England, necessarily devour a greater amount of solid food than would otherwise be sufficient. They consequently deposit the greater amount of earthy matter which that food contains, into the system. The capillary vessels are sooner obstructed to those degrees which constitute puberty and manhood, and thus they cease to grow, and become men and women (such as they are) at an earlier age than those around them who have been placed under different circumstances. Children who are not overworked, but who are great eaters of solid grain food, arrive at these states much sooner than others of different habits. The sooner an individual comes to maturity, the sooner, if the same habits are continued, will he come to the period of old age, decrepitude, and death. There seems to be no exception to this principle, either in the animal or vege-

stood he fell from the yard-arm of a ship and broke his neck. My only wonder was, that he did not break his neck long before. I should judge his age to have been about 50 or 55, though he looked to be one hundred. How a man could have lived so long with the arteries and veins of the lower extremities, and the arteries of the upper extremities completely filled with ossific matter, is mystery truly wonderful.

table world. So true is it, that the average age to which any species of organized beings exist, may be almost determined, by knowing the time at which they arrive at maturity, or begin to propagate.

As manhood is attained, the skin begins to be incrusted with a plaster-like substance, which accumulates as age advances. If the linen of some persons, after being worn a few days, be well shaken, a quantity of dust, like flour, will come from it. If the body be well rubbed with a dry hard brush or cloth, the same flour-like substance will be obtained. This dust, when analyzed, is found to consist of gelatine combined with bony or earthy matter. That it is originally derived from the food and drink, is evident from the fact, that its presence on the skin is proportionate to the amount and quality of food consumed. Aged people, for instance, having consumed for a period of sixty or eighty years an immense amount of earthy matter into the system, are incrusted to a much greater extent than young persons. Old people of the same age, also differ much in this respect; those having taken freely of solid grain food, always being worse than such as have been more sparing in their habits, and have consumed more fresh vegetables, fruits, fish, flesh, &c., and less flour preparations.

Women generally eat less food, and labor and perspire less than men; and are therefore less incrusted with calcareous matter. Their skins are much

smoother, and more pliant, and on this as well as on other accounts, they may justly be styled the "softer sex." In advanced age, however, they are more or less affected with this external impurity. For the same reasons, we observe that the skin of a child is much softer and cleaner than that of an adult. This collection of gelatinous and calcareous matter upon the surface of the body, is highly injurious to health; insomuch as it prevents the elimination of the superfluous vapors and secretions which the skin alone is calculated to discharge. It is, in fact, a part of the general ossification of the system, which is the source of disease, and ultimately of death itself. It ought very forcibly to remind us of the absolute necessity of keeping the surface of the body clean, not only by frequent washing, but by actual grooming, or scrubbing with a rough cloth, or a close, strong brush, or horse-hair gloves or belts, sold by all respectable druggists. As the earthy matter which often incrusts a common tea-kettle, is deposited in consequence of the water which held it in solution being converted into steam and driven off; and as, therefore, the more the water contains, the more will be the quantity deposited in the vessel, and the sooner will it become incrusted or "furred up"; so, in the same manner, the fluids of the body are constantly passing off in the shape of sensible and insensible perspiration, or, in other words, changing into vapor and gas. It may be called boiling away. The more we eat

and drink of substances containing calcareous earth, the more will enter into the composition of the blood, the more will be deposited internally as well as on the skin; and therefore, the sooner will the whole system become ossified, or filled or choked up, and the sooner will old age, rigidity, decrepitude and death take place.

Persons of a dull, cadaverous appearance, with hărsh rough skins, who are thĭn and bony, and continually troubled with some complaint or other, are mostly attached to food of a solid, earthy nature, such as bread, puddings, pies, tarts, cakes and flour preparations in general. We do not mean to assert that such persons never partake of other substances, but simply that grain in some form is the basis of their diet. The same may be said of such as are troubled with bad teeth, gout, ulcers, pimples and blotches of every kind, and who are susceptible of colds, headaches, &c., and more particularly is this the case when the individuals are of a costive habit of body, because then much injurious matter is retained, that would otherwise have been discharged. On the contrary, those who are bright and lively in appearance, who have clear and shining skins, full in flesh, bones small and flexible, seldom troubled with disease of any kind, and who are generally stirring and animated, are generally partakers more of fresh vegetables, greens, fruits and animal food, fish, fowls, eggs, and all kinds of albuminous and saccharine

substances, and often fond of a glass of good brandy and water, wine, ale, or other kinds of alcoholic and fermented beverages, and who care little for gross, solid grain food in any of its forms.

Heavy, clumsy persons, whose movements—when they do move—are stiff and awkward, are always great consumers of graniverous diet, whether young or old, while the more active and lively are mostly fond of light, fluid and saccharine substances. Let the reader look around him and notify these matters for himself, and the truth of these remarks will be evident. If, for instance, he should observe at any time a big, clumsy lad, whose greatest pleasure consists in doing all kinds of mischief, in teazing and tormenting every one about him, on inquiry it will be found that he is fonder of eating and destroying than producing anything in return. If he could be seen at meals, he would appear like a hungry wolf devouring all that came in his way without ever being satisfied.

It may here be remarked that the stomach is an elastic bag or sac, and the more food is put into it, the more it is distended, and the larger it becomes. Hence, the more a person eats, the more he requires to eat in order to satisfy himself; and, very often, such a diseased state of the stomach and bowels is produced by this habit, that the greatest eaters are nevertheless the most bony and ill-looking. Many persons who are full in flesh and healthy in

appearance, are less eaters than such as are thin and meager.

These facts, and many others which could be advanced, all tend to support and prove the position, that the food and drink alone are the source of the calcareous earthy matter which is gradually deposited in the body, which by degrees brings on a state of induration, rigidity, decrepitude, consequent cessation of consciousness or death. We have seen that different kinds of food and drink contain these earthy elements in different proportions; and we cannot but conclude, that the more we subsist upon such articles as contain the largest amount, the sooner shall we become ossified; and the more we live upon such substances as are comparatively free, the longer will health, activity, and life continue.

CHAPTER VII.

Proofs that the Duration of Life is Proportionate to the amount of Earthy Substances Presented in the Food and Drink.

In Pinnock's edition of *Goldsmith's History of England*, the following note appears :—

"It is stated by Plutarch that the Ancient Britons *only began to grow old* when a hundred and twenty years of age! Their arms, legs, and thighs were always left naked, and for the most part were painted blue. Their food consisted almost exclusively of acorns, berries and water."

Other histories mention fish, fowls and the flesh of wild animals, as well as eggs, milk, and the fruits, leaves, and roots of the forest, as occasionally forming portions of their diet. These articles contain a much smaller amount of earthy matter than the farinaceous or grain food, used in the present day, and hence their very extraordinary longevity. Such food must also produce a wonderful degree of activity and strength. Dr. Henry, in his History of England, states, that they were remarkable for their "*fine athletic form, strength and swiftness of foot. They excelled in running, wrestling, climbing, and all kinds of bodily exercise ; they were patient of pain,*

toil, fatigues, hunger, cold, and all manner of hardships."

The food of the New Zealanders, and many of the South Sea Islands, consists of flesh, fish, fowls, eggs, fruits, roots, berries, leaves, and sometimes seaweeds, all of which contain, on an average, a comparatively small amount of earthy substances; and we learn from the accounts of those who have visited and lived amongst these people, that they are healthy and energetic to beyond the age of a hundred years! They go to war, follow the chase, obtain a support by hunting, fishing, and roaming the forests, and in short, are equal to the finest young of this country long after one hundred years! A gentleman who has spent seven years among them declares that he has known many who could not remember their ages to within ten or twenty years.

Herodotus gives us an account of a people of Ethiopia, who, because of their longevity, were called "Macrobians." Their diet consisted entirely of roasted flesh and milk, both of which contain a small amount of earthy matter. They were remarkable for their "beauty, and the large proportion of their body, in each of which they surpassed other men." "These 'Macrobians' lived to a hundred and twenty years, and some to a longer period!"

The ancient Gynosophists of India subsisted entirely upon fruits and fresh vegetables. It was a part of their religious ordinances to eat nothing but

what the sun had ripened and prepared for food, without any farther preparation. This diet contained a very small proportion of earthy elements; and, it is said, that these people were perfectly healthy, and scarcely ever died a natural death. They lived to a hundred and fifty, and two hundred years; and some lived so long, that, disgusted with the sins and follies of the world, they became weary of their lives, and actually committed themselves to the flames. These suicidal proceedings were no doubt encouraged by the hope of realizing a more perfect state of existence in some other region of the universe.

It was a doctrine commonly taught by the Pagans of various parts of the world, that the goddess of Justice, usually named Astræa, a daughter of Jupiter, and represented with her eyes bound, a sword in one hand, and a pair of scales in the other, came down from heaven, to live with mankind, during the golden age; but at length, the world became so corrupted, that she left the earth, and returned to heaven, where she formed the constellation Virgo. She still looks down with regret upon the iniquities and consequent sufferings of men, and whenever the world becomes virtuous, she will return and live among us.

Many persons in our own day, have been so grieved at the wickedness and miseries of the world, as to find no other consolation than that arising from suicide. But no enlightened individual capable of un-

derstanding the origin and purpose of evil, and the probable condition of humanity, can for a moment think of self-destruction.

The peasantry of those parts of Ireland where wheaten bread, or any kind of grain food is scarcely ever tasted, but where potatoes, fish, turnips, greens, and fresh vegetables, generally form their principal diet, all of which things contain a moderate amount of earthy matter, are proverbial for health, activity, and a tolerable longevity.

The English peasantry consume one half more solid grain food, as bread and pastry, than the Irish, and are greatly inferior both in health, activity, duration of life, and in temper and disposition. Although the same external conditions, fresh air and exercise, and much better clothing and lodging, are enjoyed by the English, they are more bony, rigid, clumsy, and stupid than the Irish. Neither have they as much generosity, attachment, or affection; for it can be demonstrated that the moral qualities of the people depend greatly upon their habits of living—upon the nature of their diet.

Fishermen, and others, who live upon the margins of our bays, rivers and seas, and whose diet is principally fish, potatoes, and green vegetables, enjoy good health, and a very fair longevity.

Writers on Natural History inform us, that the wild hog lives free from disease to the age of 300 years. Its food consists of fruits, chestnuts, roots,

acorns and grass, with occasional grains. This food contains very little earthy matter.

The swan is said to attain the age of 300 years. Its food consists of fish, worms, grass, weeds, and fresh water muscles, or swan-muscles, as they are called. This food contains only a small portion of earthy matter.

"Some time ago, a male swan, which had seen many generations come and go, and witnessed the other mutations incidental to the lapse of two hundred years, died at Rosemount. He was brought to Dunn when the late John Erskine, Esq., was in infancy; and was then said to be an hundred years old. About two years ago, he was purchased by the late David Duncan, Esq., of Rosemount; and within that period his mate brought him forth four young ones, which he destroyed as soon as they took the water. Mr. Malison Bridget, (in whose museum the bird is now to be seen,) thinks it might have lived much longer, but for a lump or excrescence at the top of the windpipe, which, on dissecting him, he found to be composed of grass and tow. This is the same bird that was known and recognised in the early years of octogenarians, in this and the neighboring parishes, by the name of 'the old Swan of Dunn!'"—*Medical Gazette.*

Rooks and crows live to a great age, more than a hundred years, and they feed, the latter upon flesh, carrion, and putrid offal, the former upon fresh-water

muscles and other shell-fish, grubs, snails, caterpillars, and sometimes grains and seeds. This food is not very earthy.

When the crows find the shells too hard for their bills, they carry them up to a considerable height in the air, when, by dropping them down upon a rock or stone, the shells are fractured, and the fish picked out easily.

The raven, hawk, goose, and other birds of similar habits, are known to live for a long period. Their food consists of flesh, fish, worms, and all kinds of garbage, which contains but little earthy matter.

The pelican lives to more than a hundred years of age. His food consists principally of fish.

The heron, crane, sea-gull, and others of a like nature, live to a great age. Their food is chiefly fish.

The eagle is supposed to attain a great age. Tacitus says 500 years.

"Thy youth is renewed like the eagle's."—PSALM ciii. v. 5.

Its food consists of flesh and fish, which contain a much less amount of earthy ingredients than the flour food of the human species.

Some of the parrot species are believed to live in their native state five or six hundred years ; and their food is mostly of the pulp of fruits, which is almost free from earthy matter.

Common fowls, the sparrow, tame pigeons, singing

and domesticated birds, that feed upon bread, seeds, and grain of different kinds, which food is highly charged with earthy substances, live only from ten to twenty years.

The elephant subsists upon fruits, flowers, meadow-plants, and the leaves and tender shoots of trees—particularly the banana, cocoa, palm, and sago tree—all which contain a small proportion of calcareous earth, and it lives to a great age. Thompson, the poet of nature, thus sets forth the longevity of the elephant:—

> "With gentle might endued,
> Though powerful, not destructive; here he sees
> Revolving ages sweep the changeful earth,
> And empires rise and fall;—regardless he
> Of what the never-resting race of man
> Project."

The horse, cow, pig, dog, and other domesticated animals, subsist upon food which contains a larger amount of earth than their natural food, or that which they choose in a wild state, and we perceive a corresponding difference in the periods of their existence. It is a well known fact to carters and others, who feed horses, that corn food, although it makes them plump and fleshy, soon renders them rigid, and materially shortens their existence. It is a common remark, when a horse is stiff and lifeless, "that it is no wonder when we consider what a quantity of corn he has had."

It is customary for sportsmen, when they require greyhounds for activity and swiftness in coursing, to give them as little solid food as possible ; and to feed them upon rice or sago pudding, mixed with a large quantity of currants.

The monkey tribes are supposed to live, in their wild state, to a great age. They consume fruits and herbs—they are also known to eat eggs, small birds, cocoa and nuts. When brought to this country, however, their food is changed, and they are fed upon bread and potatoes, which being more earthy than their natural element, bring on symptoms of decrepitude, and in five or six years they die of apparent old age. If the proprietors of these animals would allow them plenty of fruits, their natural food, they would live, even in the North here, much longer than they do at present.

The pike or jack, as well as most other fish, is known to attain a great age. Gesner says, " That the longevity of the pike is almost incredible. He mentions as an instance, one that was taken in Hailbarn, in Swabia, in the year 1497, with the words engraven on a ring,—' I am the fish that was first of all put into this lake, by Frederick II., Oct. 5, 1230.' This gave it the age of 267 years."—*Rhind's Six Days of Creation.*

Some naturalists think that the whale, shark, and some others, live nearly 1000 years.

Serpents are supposed by many to be almost im-

mortal. Several writers have declared their belief that the serpent never dies, but continually renews itself.

"The wisdom and subtilty of the serpent are frequently mentioned in Scripture, as qualities which distinguish it from other animals; and several are the instances wherein it is said to discover its cunning: 1. When it is old, by squeezing itself between two rocks, it can strip off its skin, and so grows young again. 2. As it grows blind, it has a secret to recover its sight by the use of fennel. 3. When it is assaulted, its chief care is to secure its head, because its heart is under its throat, and very near its head. And 4. When it goes to drink at a fountain, it first vomits up all its poison, to prevent poisoning itself as it is drinking."—*Calmet's Dictionary.*

The present population of London, though upwards of two millions, and the modes of existence of thousands very precarious, yet from its consumption of animal food, &c., it is probably the most healthy in the world. Its consumption is about as follows :—

	Tons.
Bullocks,	150,000
Calves,	360,000
Sheep,	1,000,000
Lambs,	350,000
Pigs,	340,000
Fish,	140,000

Immense quantities of hares, rabbits, venison, turtle, and fowls of every description.

Wheat,	1,360,000 qrs.
Butter,	18,000 tons.
Cheese,	19,000 do.
Potatoes,	800,000 do.
Milk,	13,000,000 gallons.
Wine,	12,050,000 do.
Ale, porter, cider, perry, home-made wines, and other artificial drinks,	150,000,000 gallons.

Besides innumerable tons of fresh vegetables, and garden produce of every kind; vast quantities of native and foreign fruits,—fresh, dried, and preserved; sugar, molasses, oils, sauces, pickles, and every possible variety of natural and artificial aliment, from every corner of the earth. There are not less than eight hundred persons, men, women, and children, obtaining a living in London by the vending of watercresses alone. The total sum received daily for this article, is about £28,560 sterling, in the year."—*Morning Advertiser.*

It appears that the consumption of flour in London is considerably less than half-a-pound daily for each inhabitant, to make both bread and pastry. The articles which constitute their average diet contain much less earthy elements than those of most other cities either in Europe or America. And notwithstanding the frequency of destructive fires, fogs, many accidents on land and river, the constant influx of strangers from every clime, and of every constitution, the prevalence in some parts of so

much filth, disease, and misery, and the thousand other drawbacks to the general health, inevitable to such an overgrown city, and amidst an overgrown population; they enjoy life for a longer period, as will be seen by the following tables of annual mortality:—

London,	1	dies out of every	46
Geneva,	1	"	43
Petersburgh,	1	"	37
Baltimore,	1	"	36
Leghorn,	1	"	35
New York,	1	"	35
Berlin,	1	"	34
Paris,	1	"	32.3
Philadelphia,	1	"	31
Naples,	1	"	28.2
Brussels,	1	"	25
Rome,	1	"	24
Amsterdam,	1	"	24
Vienna,	1	"	22.5

If we could take the average mortality of the regular well-conducted inhabitants of London, apart from the strangers, and occasional residents, their mode of living being *less* of an *earthy character than others*, they would exhibit a much higher standard of health and longevity than the same number of persons congregated under similar circumstances in any other part of the globe.

The poor classes of society everywhere, consume a much larger quantity of bread, or flour, and potatoes, than the wealthier classes, chiefly because their scanty

means will not enable them to purchase more costly food. The wealthier classes use more animal food, fowls, fish, fresh vegetables, fruits, preserves, wines, and other luxuries.

Mr. Cobden, and a Mr. East, made speeches at Manchester in England some years ago, and both proved from statistics, that in proportion to the paucity of a man's income, is the proportion of bread he consumes. For as his wages rise, he purchases meat, fruit, and vegetables, and diminishes his consumption of bread. Bread and potatoes constituting so large a proportion of the *workers'* diet, and containing so much earthy matter, inevitably renders them more liable to disease, and premature old age and death. And so it is found, that the rate of mortality among the poor of England is much greater than among the rich, as the following table will show :—

From the age of	25 to 40	205	rich, and	550	poor	die.
"	40 " 50	244	" "	426	"	
"	50 " 60	349	" "	718	"	
"	60 " 70	737	" "	1501	"	
"	70 " 80	1489	" "	2873	"	
"	80 " 90	2787	" "	..		

From the above, it appears that at every stage of life, up to the age of 80, the number of poor who die is double that of the rich.

" The Egyptians arrive at a great age. Dr. Clott speaks of a man whom he had seen, 130 years

old, without any other infirmity than cataract in one eye; and he knows another now living, at 123 years of age, who enjoys a perfectly sound state of health, and has several children, the eldest of whom is 80, the second 74, the third three years old, and the youngest only a few months. This man, at the age of 82, cut six new teeth, which he was obliged to have immediately extracted, on account of the pain and inconvenience they occasioned him."—*Foreign Quarterly.*

Fruits and fresh vegetables enter largely into the ordinary food of the Egyptians. These contain a small proportion of earthy substances, and must tend, by preventing the consolidation of the system, to preserve their health, and lengthen out their existence.

Women are generally more analogous to children in their choice of food than men; they also consume a smaller quantity, but are mostly fond of the best description. Instead of a large amount of rough, solid food, they prefer a smaller amount of aliment, and that of a more fluid, pulpy, and nutritious nature. It is not so much the quantity they care for, as the quality. The consequence of this taste is the avoidance of a large amount of earthy matter, and they are therefore softer and more flexible—less ossified than men, and require more time to harden and "fur up" to that degree which produces death; hence women are found to live longer on the average than

men. A Dr. Thompson, in a lecture published some few years ago, says :—

"It cannot fail to be remarked as a striking fact connected with human mortality, that notwithstanding the peculiar and more severe diseases to which females are necessarily exposed, and their more delicate constitution, they are more long lived than males. The average of males in England and Wales in 1838 was 44, while that of females was 47, giving an average of 7 per cent. of excess of mortality among the males over the females. This fact is the more remarkable, when we consider that upwards of one hundredth of all the deaths in the metropolis arise from diseases *peculiar* to females, while they are *equally exposed* to all other diseases of a mortal nature.

"In Sweden, the whole number of females in 1763, was to that of males, in the proportion of nine to ten. The number of old women who exceeded 80 years of age, was to that of old men of the same age, in the proportion of 33 to 19 : and there were more women who had attained the age of 86, than men, by almost two to one."—*Sibly.*

In America, the deaths among the women are in proportion to the men as 50 to 55. The number of widows is to the number of widowers, as 3 to 1.

On this principle we may at once account for the fact, that, notwithstanding the causes of disease and dangers peculiarly incidental to females, their num-

ber is considerably greater than that of males over the civilized globe, and this, too, when for thirty years there has been a general peace! So that this difference cannot be attributed to the sacrifice of males in war, but to the greater longevity of females; which extra longevity is the consequence of their attachment to a less solid and earthy food. It is true that many women are as stout and bony, and as rough as men, and as liable to premature decrepitude and death; but these will always be found to eat and drink like men.

The *primitive Christians* of the East, when driven to the desert by persecution, lived upon a *daily* allowance of *twelve ounces* of bread, with water for drink, and they attained an average age of from one hundred to one hundred and twenty years. It is clear that if a person lives upon a small amount of food, containing a large proportion of *earthy matter*, he may live as long as one who consumes a large amount of food, containing a small amount of earthy matter, and *vice versa*. The effects, so far as the amount of earthy substances deposited, and the consequent ossification of the body, is concerned, being in both cases the same. Here we discover the cause of some persons having lived to great ages, who have been remarkable for their abstemious habits, and of others having attained to equal ages, who have been noted for their indulgence both in eating and drinking. The primitive Christians are instances of the

former, and the latter may be instanced by the following cases.

In the 105th year of his age, Mr. Thomas Whittington died at Hillingden, Middlesex, in December, 1804. This gentleman retained his faculties apparently undiminished to the very last hour of his life. His long life was rendered remarkable, not by abstemiousness, *nor by temperance*, but by the contrary line of conduct; by his constant attachment to hearty meals, and his propensity to drinking. Mr. Whittington's favorite liquor was gin, of which he seldom failed to take a tolerable portion, till within a fortnight of his dissolution.

Mr. Henry Hastings, a very celebrated sportsman, lived in the time of James the First, and his son Charles the First. He was second son to the Earl of Huntington, and inherited a good estate from his mother. His oyster-table stood at the lower end of his room, which was in constant use twice a day, all the year round, as he never failed to eat oysters both at dinner and supper. At one end of his room was a door, which opened into a closet, where stood bottles of strong beer and wine; answering to this closet was a door into an old chapel, which had been disused for devotion; but in the pulpit, as the safest place, was always to be found a cold chine of beef, a venison pastry, a gammon of bacon, or a great apple pie, with thick crust, well baked. His sports supplied all but beef and mutton, except on Fridays,

when he had the best of fish. He drank a couple of glasses of wine at meals; put syrup of gillyflowers into his sack; and had always a tun-glass of beer standing beside him, which he often stirred with rosemary. He lived to 110, never lost his sight, and never used spectacles. He rode to the death of the stag till near 100 years, and died in 1639.

Maffeus, a Portuguese author, who wrote the "History of the Indies," who has always been conconsidered a model of veracity, as well as of elegant composition, mentions a man by the name of *Numas de Cugna*, a native of Bengal, who died in the year 1566, at the incredible age of 370 years!

"He was a person of great simplicity, and quite illiterate; but of so extensive a memory, that he was a kind of living chronicle, relating very distinctly and exactly what had happened within his knowledge, in the compass of his very long life, together with all the circumstances attending it. He had four sets of teeth, and the color of his hair and beard had been frequently changed from black to gray, and from gray to black. He asserted, that in the course of his life, he had had seven hundred wives, some of whom died, and the others he had put away. The first century of his life passed in idolatry, from which he was converted to Mahometanism, which he continued to profess till his death."

This account is confirmed by another Portuguese

author, Ferdinand Lopez Costequeda, who was Histriographer Royal.

Margaret Patten, aged 137, of St. Margaret's Workhouse, London; a Scotch woman. She always enjoyed good health, and subsisted for many years mostly on milk.

Charles Macklin, Esq., aged 107, of St. James' street, London, an eminent dramatic writer, and celebrated comedian of Covent Garden Theater; the veteran father of the stage. He had long been in a state of natural decay, yet his spirits never forsook him till a few minutes before his final exit, which took place without a groan.

"In the former part of his life, till about 45, he lived very intemperately and irregularly, sitting up whole nights at a debauch, afterwards sitting up to hard work and violent exercise. Subsequent thereto, he determined to live by rule, which he scrupulously observed. It *then* was his custom to promote perspiration, and then changed his linen. When he afterwards drank too much, he always took a pill to prevent headache next morning. His principal food was flesh, fish, fruits and vegetables. Instead of tea, he took milk sweetened with sugar. About the year 1764, he lost all his teeth from his early imprudences, and afterwards confined himself to fish, eggs, jellies, fruits and spoon food. Having suffered a severe attack of rheumatism, he avoided most of its pains by sleeping in blankets. For the last twenty

years, he never took off his clothes, unless to change them, or be rubbed all over with warm brandy or gin, or with warm water."

Ann Day, aged 108, a well known English gipsy. She had not slept in a bed for 70 years; and for the last 40 years she had not a tooth in her head, nor sight, but by one eye. She lost three of her toes by frost, and by sleeping in the snow one evening lost the use of one of her arms. She died under a hedge, near Henslow, Bedfordshire, and was buried at Arsley, near that town.

John Wilson, aged 100, of Sosgill, Cumberland. He was formerly a blacksmith, which profession he followed near sixty years; in all which time his beverage was milk or water, with the daily exception of two glasses of ale, and one glass of spirits.

Ann Bannerman, aged 105, of Aberdeen. She principally subsisted on vegetables and small beer.

Hon. Mrs. Watkins, aged 110, of Glamorganshire. For the last thirty years she subsisted entirely on fruits and vegetables.

Rev. Mr. Davies, aged 105, of Hereford, Rector of Staunton-upon-Wye and Vicar of All-Saints, Hereford. He was a remarkably hearty eater, and was quite as hearty a drinker. He never went to bed without a moderate allowance of wine, and he never had the gout, stone, colic, or any of those infirmities of a disagreeable kind, which generally attend old age.

William Sharply, aged 138, of Knochall, county of Roscommon, Ireland. He lived well and regular, but was very far from being abstemious.

John Riva, aged 116, of Venice, exchange broker. He always chewed citron bark, drank wine moderately, and had a child after he was 100 years old.

Owen Carollan, aged 127, of Dulech, Meath, Ireland, laborer. His food was principally potatoes, butter and milk, with plenty of cherries during the season.

Elizabeth Macpherson, aged 117, of Caithness, Scotland. Her diet was buttermilk and greens. She retained her health and senses till near her death.

Mr. Dobson, aged 139, of Hadfield, farmer. His diet was principally flesh, fruits, vegetables, milk and cider. Ninety-one children and grandchildren attended his funeral.

John de la Somet, aged 130, of Virginia. He was a great smoker of tobacco, which, agreeing with his constitution, may not improbably be reckoned the cause of his uninterrupted health and longevity.

Phillip Laroque, aged 102, of Frié, in Gascony, butcher. At the age of 92 he cut four new teeth, was drunk regularly twice a week, till he was 100 years old, and worked hard till his death.

Francis Confit, aged 150, of Burythorpe, near Malton, Yorkshire. He was temperate in his living, and used great exercise, which, together with his eating new-laid raw eggs, enabled him to attain such an

extraordinary age. He retained his senses to the last.

"Philip Loutier, aged 105, of Shoreditch, London, a French barber. He drank nothing but water, and eat only once a day."

"Mrs. Boyce, of Guildford, Surrey, aged 107. By temperance she acquired constant health, and retained her senses to the last."

"Paul Barrot, aged 106, of Nice, a priest. He continued in good health by living on vegetables."

"Mary Rogers, aged 118, of Penzance, Cornwall; lived the last sixty years on vegetables."

"Fluellyn Pryce, aged 101, of Glamorgan. His organs had been so little injured by the weight of years, that within three years of his death, he directed a village choir in some variations for the Sunday. He never used spectacles till within fifteen months of his dissolution; and possessed a great flow of spirits, attended with sound health and activity, which blessings were the result of his abstemious manner of living. Herb teas were his breakfast; meat, plainly dressed, his dinner; and, instead of a supper, he refreshed himself with smoking a pipe of tobacco."

"Joseph Ekins, aged 103, of Combe, Berks, laborer. He never suffered a week's illness; and, for the last forty years, subsisted entirely on bread, milk, and vegetables."

"Henry Grosvenor, aged 115, a gentleman of

French extraction, of Inch, county of Wexford, Ireland, surveyor of the coast, at Blackwater. He was very sparing in his diet, and used much exercise."

"Spottiswood mentions one *Kentigen*, (afterwards called *St. Mongah*, or *Mungo*,) who never tasted wine or strong drink after he came to the years of understanding, and slept on the ground, notwithstanding which he lived to the very extraordinary age of 185 years."

"Valentine Cateby, aged 116, of Preston, near Hull. His diet for the last twenty years was milk and biscuit. His intellect was perfect till within two days of his death."

"John Wilson, aged 116, of Warlingworth, Suffolk. His suppers, for forty years, were roasted turnips."

Edward Drinker, aged 103, of Philadelphia. He lived on very solid food, drank tea in the afternoon, but eat no supper."

"Donald McGregor, aged 117, of the Isle of Sky, in Scotland, farmer. He was temperate at meals, and took much exercise."

"Alexander Macintosh, aged 112, of Marseilles. For the last ten years he lived entirely on vegetables, and enjoyed a good state of health till within two days of his death."

"James le Measurer, aged 118, of St. Jean Pied de Port, in Navarre. His common food for some years was vegetables."

"Lewis Morgan, aged 101, of Llwingtdod, Radnorshire. His death was occasioned by a fall: he was in perfect possession of his faculties, lived chiefly on vegetable diet, and drank frequently of the famous rock water of Llrandridod."

"Mr. Smith, aged 103, of Dolver, Montgomeryshire, farmer, was never known to drink anything but buttermilk."

"Cardinal de Salis, aged 110, Archbishop of Seville, died in 1785. He enjoyed to the last every faculty except strength and hearing. He used to tell his friends, when asked what regimen he observed, 'By being old when I was young, I find myself young now I am old. My diet was sparing, though delicate; my liquors, the best wines of Xerez and La Mancha, of which I never exceeded a pint at any meal, except in cold weather, when I allowed myself a third more. I rode or walked every day, except in rainy weather, when I exercised for a couple of hours. So far I took care of the body; and, as to the mind, I endeavored to preserve it in due temper, by a scrupulous obedience to the divine commands, and keeping (as the Apostle directs) a conscience void of offence toward God and man. By these innocent means, I have arrived at the age of a patriarch, with less injury to my health and constitution than many experience at forty. I am now like the ripe corn, ready for the sickle of death; and, by the

mercy of my Redeemer, have strong hopes of being translated into his garner.' "

" Ann Davies, aged 102, of Tetbury, Gloucestershire. She had the perfect use of her faculties till the last minute of her life. She had not been out of her room for the last fifty years of her life, nor ever, during that period, even in the most extreme cold weather, would suffer any fire in her chamber."

" Jonas Warren, aged 107, near Baldoyle, in Ireland, fisherman. His appetite was so keen, that, within a few weeks of his death, he ate near three pounds of solids, and drank three pints of ale, at one meal."

" William Riddle, aged one hundred and sixteen, of Selkirk, in Scotland. This man, who in the early part of his life, was a considerable smuggler, and remarkable for his love of brandy, which he drank in very large quantities, was always so fond of good ale, that he never drank a drought of pure water. He was not a drunkard, but had frequent paroxysms of drinking, which continued several successive days. After his ninetieth year, he at one time drank for a fortnight together, with only a few intervals of sleep in his chair. He was three times married; when he married his third wife, he was ninety-five years of age. He retained his memory and other faculties, to his death. In the last two years of his life, his chief subsistence was a little bread infused in ale."

" James Peters, aged one hundred and seven, of

Dundee, a traveling packman. Although he often slept in the fields and shades, he enjoyed an uninterrupted state of good health; and, until the last year of his life, retained his memory. His strongest beverage was small beer."

"Daniel Bull M'Carthy, aged one hundred and eleven, of the county of Kerry, Ireland. At the age of eighty-four he married a fifth wife, aged fourteen, and had by her twenty children, one every year; he was always very healthy, and never observed to spit; no cold affected him; he could not bear the warmth of a shirt at night, but put it under the pillow; for the last seventy years, when in company, he drank plentifully of rum and brandy, which he called *naked truth;* and if, in compliance with solicitations, he drank claret or punch, he always drank an equal glass of rum and brandy, which he called a *wedge*."

"Margaret Hunter, aged one hundred and four, of Newcastle. Her beverage was mostly water or milk, having never drank more than a half-pint of malt liquor."

"Judith Bannister, aged one hundred and eight, of Cowes, in the Isle of Wight. She was attended to her grave by eighty of her descendants. She lived upon biscuit and apples, with milk and water, the last sixty years of her life."

"On Sunday, the 15th of July, 1764, died, in the one hundred and twenty-fifth year of his age, George Kirton, Esq., of Oxnop Hall, near Keeth, in the

county of York. He was a remarkable instance, that length of days are not always entailed upon a life of temperance and sobriety; for no man, even till within ten years of his death, made more free with the bottle."

"Died lately (1840), at Kingston-upon-Thames, Surrey, Mr. Worrall, aged one hundred and twenty years. For the sixty years previous to his death, he is said almost to have lived entirely on fermented and spirituous liquors."

"An old man (name unknown) died several years ago, at Richmond, Surrey, at the age of one hundred and ten years. He was seldom sober for the last thirty years of his life."

"John Baylis, of Northampton, was reported to be one hundred and thirty years of age, when he died. Dr. Kiel says, 'His diet was anything he could get; I never heard he was fonder of any one kind of food than another.'"

"Old Thomas Parr was born in Winnington, in Shropshire, in the year 1483, and although in his youth he was greatly afflicted with the king's evil and bloody flux, lived to the age of one hundred and fifty-two years. He was first married at the age of eighty-eight, and seemed no older than at forty-five; he married a second time at the age of one hundred and twenty; at the advanced age of one hundred and forty-five he was able to run races, thrash corn, and accomplish any kind of laborious work. He frequently ate by

night, as well as by day, and always preferred the plainest food. He might be seen early in the morning,—

"Lusty as health, come ruddy to the field,
And there pursue the sport; as if he meant to overtake time,
And bring back youth again."

His body was found to be in the most perfect condition when opened after death, as it was by the celebrated Harvey.

Taylor, the water poet, thus describes his habits:

"Good wholesome labor was his exercise,
Down with the lamb, and with the lark arise;
In mire and toiling sweat he spent the day,
And to his team whistled time away;
He was of old Pythagoras' opinion,
That green cheese was most wholesome with an onion,
Coarse meslin bread, and for his daily swig,
Milk, buttermilk, and water, whey, and whig;
Sometimes metheglin, and by fortune happy,
He sometimes sipped a cup of ale most nappy;
Cider, or perry, when he did repair,
To Whitsun ale, wake, wedding, or a fair;
His physic was good butter, which the soil
Of Salop yields, more sweet than candy oil,—
And garlic he esteemed above the rate
Of Venice treacle, or best mithridate."

The body of old Parr is said to have been covered with hair.

"From head to heel, his body had all over,
A quick set, thick set, nat'ral hairy cover."

"At Valentia, Ireland, in his one hundred and

sixth year, died Mr. John Murphy, commonly called 'Paul Jones.' He had been taken prisoner by that remarkable man, when commanding a French squadron off the coast of Kerry. When he sent a boat on shore at Valentia, for a supply of water, the people seized the boat and crew, and young Murphy being on board his vessel at the time, as pilot, Paul Jones carried him off, and he was compelled to serve for two years in the French frigate; during which time he accumulated a good sum of prize money. *He lived on potatoes and milk;* and, notwithstanding his wealth, never increased his comforts. He was a remarkably strong man; and, till within the last few years, hale and robust, and walked and rode."

"It has been said that the Irish laboring classes are a remarkably robust race; although their food consists almost exclusively of potatoes. The fact is overlooked, that the Irish eat a quantity of potatoes so enormous, as could not fail to make up, in some measure, for the want of animal diet. It was found by the Poor-Law Commissioners, that the greater number of peasantry of Ireland, women as well as men, take at their two daily meals, in general, about nine pounds weight of this food."—*Chambers' Journal, No.* 42.

"Francis Wilkes, of Stowrbridge, Worcestershire, laborer, died at one hundred and nine years of age, was very abstemious in his habits of eating, and seldom drank anything stronger than small beer. His

poor neighbors believed he had bought his immortality from a witch."

"Henry Jenkins lived to the extraordinary age of one hundred and sixty-nine years. He was born on the 17th of May, 1500, at Ellerton, in Yorkshire, and died in 1670. He assisted his father in his early years as a fruit grower, and market gardener. All his family were remarkable for longevity. An only sister of his died at the age of one hundred and twenty-five, and his grandmother lived to the age of one hundred and thirty-eight years. Old Jenkins was always a great admirer of nature, and extremely fond of fruits, flowers, and herbs. It was his daily custom to rise very early, with the 'song of earliest birds,' and wander through the woods, or over hill and meadow, at peep of day, in quest of divers medicinal herbs, the study of which he was so fond of.

"With regard to the diet of this wonderful old man, it was always simple; consisting mostly of cold meats and salads, of which he partook, with water for his drink, in moderate supplies. It was in the year 1524, during the reign of Henry VIII., that the hop plant was introduced into England from Flanders, and cultivated for the preservation of beer; which Jenkins, being a great advocate for bitters, used for that purpose; and he never found a moderate portion of that beverage, taken once a day, at all disagree with him or hurt him. He partook of light suppers, frequently walking out in his garden after-

wards to promote digestion. Water was, however, his favorite beverage, and he usually drank a half pint of it every morning when first he arose. Besides abstemiousness in the article of food, his general habits were regular and sober. Following the directions of his mother, he always continued the use of flannel and warm clothing, which had been commenced in infancy. He was robust and healthy to old age—a hearty, respectable, good-looking old man, who never knew what real illness was, until a year or two before his death. He warded off the first attacks of disease by resorting at the first appearance of the enemy, to defensive or preventive measures, never waiting to parley with the insidious foe; and he always found his plan successful.

"It is said that Jenkins was crossed in love during his younger days; and that, taking the conduct of the fickle fair one to heart, he ever afterwards vowed enmity to a wedded life. Whether this be true or not, it is true he had an aversion to marriage. It is, however, stated, that when he was ninety years old, a young woman was pregnant by him, for which he was severely lectured by the minister of the parish, and nothing but his age excused him from doing penance.

"When Jenkins was near his hundredth and sixtieth year, King Charles II., being informed of his astonishing longevity, expressed a desire to see him in London, and sent a carriage purposely to convey him

thither. He preferred, however, to go on foot, and actually walked to the Metropolis, in easy stages—a distance of two hundred miles. On his arrival in London, the hoary patriarch was introduced to his majesty. The King introduced Jenkins to his Queen, who took much interest in him, putting numerous questions to the patriarch, amongst which she asked, "Well, my good man, may I ask of you what you have done during the long period of life granted to you, more than any other man of shorter longevity?" The old man looking the Queen in the face, with a low bow *naïvely* replied, "Indeed, madam, I know of nothing greater than becoming a father when I was over a hundred years old!" The King held a long conversation with him, and made many inquiries as to his mode of living; but nothing particular being observable in that, inquired by what means he contrived to live so much longer than other men. To this he replied, that temperance and sobriety of living had been the means, by the blessing of God, of lengthening his days beyond the usual limit. The King, who was fond of dissipation and luxury, seemed not much pleased with some of Jenkins' homely maxims, and dismissed him; but allowed him a comfortable pension, which he enjoyed the remainder of his life."

In the Scriptures we are told that, for several centuries after the deluge, one hundred and twenty was about the average period of human life. Abraham lived to one hundred and seventy-five years of

age; his sons, Isaac and Ishmael, the former at one hundred and eighty, and the latter at the age of one hundred and thirty-seven. Jacob lived to one hundred and forty-seven years old, and his son Joseph reached one hundred and ten years of age. Long after this Moses lived to be one hundred and twenty years old, and "his eye was not dim, nor his natural force abated." Joshua died at the age of one hundred and nineteen years.

Louis Cornaro, a Venetian noble born in 1467, was a remarkable man. Having, in youth, injured his health by all sorts of dissipation, he resolved to restore it, and lived to the age of ninety-eight by means of a particular and strict regimen of diet. He published a highly valued treatise on temperate living, which first appeared at Padua in 1558, and was republished in many languages.

My grandfather, Edmund Bostwick, was a man of a quiet, sedate, contemplative and pious character. He was never known to laugh or whistle. He married Mercy Ruggles. They had thirteen children. His living consisted chiefly of vegetables and meat, —little salt and little bread—he drank but very little water. He was never sick during his life, nor even at his death. He died aged 99. He had been out walking—returned home, seated himself in a chair, and died suddenly without a struggle. His wife lived in the same manner, and died aged 90. His first son, Ebenezer, was born June 22, 1753.

Died March 16, 1840, aged 87. He was always remarked for his temperance, peculiarity and simplicity of living, following the example of his father almost to the letter. He was orderly sergeant during the Revolutionary war, and was frequently heard to relate the following anecdote. "Sergeant Bostwick," said Washington, "take good care of the soldiers, for it takes a mother a long time to make a soldier." His second son, Elizur, was born January 13, 1755. He is now living in Edenburg, Ohio, and enjoying good health and spirits. I received a letter from him lately, and were one to judge from the looks of it, it would be said to come from the pen of a young bookkeeper. He has likewise lived much after the simplicity of his father, and is now in his 96th year. His son Medad was born January 14, 1760; died 1840, and was 80 years of age. His son Gershom, born 4th July, 1761; died 11th May, 1831, and was 70 years of age. His son Doctor, born October, 16, 1764, and is living in Edenburg, Ohio, enjoying the best of health, and is 87. His daughter Lucy was born March 5, 1772. She is now living on the borders of Lake Champlain, and is 79 years old—enjoying the best of health. His son Robert, born March 15, 1774, died 1845, in his 71st year. His son Heman, who is my father, and the youngest of his boys, was born April 15, 1777, and is still living in Monkton, Vermont, enjoying the best of health, and is in his 74th year. He is remarkable

for his great strength and activity. He is able to go into the field and do a greater day's work than the most of men can at 30. He lives chiefly on vegetables, corn and rye bread, and has always been in the habit of drinking a little whisky; not every day, but frequently. He is a house builder, and has always worked hard at his trade.

It will here be seen, by adding together the several ages of six of his children who are dead, that they lived 422 years, and the four yet living 336, making a total of 758. There are very few fathers who can boast of leaving ten children out of thirteen, who attained to such old age. And there is a good prospect that the four yet surviving will live many years. These uncles of mine have been remarkable for their temperance in living, and have left a good example for their nephew to follow, and I shall try my best to profit by it.

As before remarked, it is not, strictly speaking, the diet itself which influences the process of ossification, but the earthy substances which the diet contains. And, as the proportion of earth differs in different articles, it will be obvious that persons who indulge freely in eating and drinking, but who happen to select such kinds of food and drink as contain a *small* portion of this matter, will be quite as healthy, as full in flesh, as good looking in every respect, and as likely to live to as great an age, as those who are abstemious, and consume a *less* amount

of food containing a *large* proportion of earthy matter. This is proved by the fact that statesmen, clergymen, merchants, physicians, and the middle classes generally, who are mostly fond of what is called "good living," are as healthy, and attain to as great ages as any other class in society;—as will be seen from the following table, condensed from *Chambers' Journal*:—

	Average Duration of Life
Statesmen and Lawyers	69.5
Physicians	68.0
Divines and Theologians	67.4
Musical Composers	65.7
Philosophers and Mathematicians	65.5
Artists	64.5
Miscellaneous Literary Men	62.6
Poets	59.8

It may be remarked, in reference to this table, that artists, literary men, and poets—the last in particular—are in general exposed to more privations than the other classes named in the list; their difficulties and sufferings, arising from poverty, and in some cases utter destitution, are proverbial. Being poor, they cannot, of course, enjoy many luxuries or choice articles of food; but subsist, for the most part, in the same manner as the poorest of the people—bread and potatoes constituting the *basis* of their diet. This food being of the most earthy and gross kind, necessarily induces decrepitude and death at an early period. Even their *average* life, which, of

course, includes those in good circumstances, is eight or ten per cent. less than some of the classes who are more fortunate in condition; and who, consequently, are enabled to enjoy more nutritious and less earthy aliment; but, if we take individual cases, we shall find a still greater contrast. There is, however, another consideration on this point. Literary men and poets are generally less thoughtful, as to what they should eat, than perhaps most other persons. They seldom make their stomachs their study, but are often contented with that kind of meat which is soonest prepared; and this will commonly be something made with flour as the basis.

The paupers in England are fed in a much more liberal style than those of Scotland: the former getting about 30 ounces of solids per day, including 3 ounces of the best animal food. It now becomes of importance to learn how the paupers in the two countries thrive on their respective allowances, and here a *very surprising result meets our eye.* The deaths in the Manchester workhouse from September 1, 1837, to August 31, 1838, were 295, the average number of inmates being 708. In the Edinburgh workhouse, during the five years preceding 1831, the average annual mortality amongst an average of 400 inmates, was $61\frac{3}{5}$, say 62. Thus, in the Manchester workhouse, 1 dies for every $2\frac{8}{2\,0}$,—or about $2\frac{1}{2}$; while in the Edinburgh workhouse, 1 dies for every $6\frac{9}{2\,0}$, or about $6\frac{1}{2}$; the mortality in

Manchester, (where the greatest amount of solid food is given,) is nearly three times greater than in Edinburgh.

The returns of the English Prison Discipline Society confirm the infallibility of this principle.

Weekly cost of maintenance per head	s. d.	Amount of sickness per annum per cent.
Wakefield House of Correction, Yorkshire,	1 8½	6
Suffolk County Jail,	1 9	10
Woodbridge Jail,	3 6	18
North Allerton,	5 0½	37

By this we clearly observe that *sickness and disease increase just in proportion as the consumption of food increases !* This, which may appear incredible to many, is nevertheless verified by other observations.

Weekly amount of solid food per head.	Ounces.	Amount of sickness per annum per cent.
House of Correction Cold-bath Fields, London,	174	4½
Guildford House of Correction,	230	9

From Returns of the Poor-Law Commissioners respecting the diet and mortality in sixty different prisons, sickness and mortality appear to increase in proportion as the consumption of food increases.

Average weekly consumption of solid food.	Ounces.	Sickness per cent,	Deaths.
In 20 prisons,	188	3	1 in 622
In 20 others,	213	18	1 " 320
In 20 others,	218	23	1 " 266

Although we have seen by the foregoing tables, and

other evidence, that sickness and death advance with an increase of solid food, it by no means follows, that this is applicable in the contrary direction, beyond a certain point. It certainly would appear, at first sight, that the less food the better health, and the longer life; but when we know that the human body is constantly wasting—that its elements are constantly being thrown off, we see the necessity for supplying, at least, as much nourishment as will equal the amount wasted. This is the *minimum* point. Below this we cannot go without producing injury to the system. If we fail to take in as much nutriment as the body throws off, sickness and death will speedily ensue. But through all degrees above this *minimum* point, we may consider it as an axiom, that *the less we eat and drink*, the more shall we retard the ossification of the body, and the longer shall we enjoy existence. Abstemiousness, so far as regards the food in ordinary use, as bread, potatoes, and similar gross and limy articles, will certainly conduce to elasticity and longevity. But still, if we take care to avoid these things which contain a large proportion of earthy matter, we may enjoy the same amount of health and length of days, even though not so sparing in our diet. It may be repeated, that, if this one principle be attended to, there will not be much occasion for nicety in other respects. Let it be understood, however, that we neither encourage intemperance, gluttony, nor extravagance.

The facts now brought forward, and which are only a tithe of what might be advanced, tend to prove, in the most unequivocal manner, that in proportion as individuals, classes, or even nations, subsist upon aliment containing the smallest proportion of earthy elements, do they prevent or retard the process of consolidation, maintain a state of health and activity, and prolong their existence.

As long as we can supply fuel to a fire, and keep it free from the ashes, it will continue to burn. If this can be done for one hundred or a thousand ages, the fire will continue to warm and enliven for that period; so in the same manner, if we can supply the body with proper food, and keep it free from the earthy matter, the ashes which choke it up, will it continue to live. Time, or the number of years, has nothing whatever to do with old age or death. A man is old, or decrepit, when he is choked up, or consolidated, to a certain extent; whether he is ten, fifty, or one hundred years. It is the chemical changes that occur in the body, that produce disease, decrepitude, and death; and these we must carefully consider. The wild hog, the swan, the parrot, eagle, and other creatures, are known to live periods of several hundred years; the whale, and others, for a thousand years; while serpents are believed by many naturalists to avoid death altogether!! The ancient Britons, and others, only *began to be old*—only *began* "to go down hill" at a hundred and twenty, or

a hundred and thirty years of age! Reader! what, art thou less than a pig—a swan, an eagle, a parrot, a toad, or a serpent; or thine ancestors? Is it not sheer ignorance of thy organization—in short, is it not thy ignorance of God and nature's laws alone which kills thee?

CHAPTER VIII.

Various Opinions respecting the Preservation of Life, and the Nature of Calculi, Gravel, and Bladder Diseases.

From the remotest antiquity, the human mind seems to have been occupied in endeavors to preserve health and life to a much greater period than is usually enjoyed. Whatever danger or difficulty may beset us, our whole strength and energy are called into action to defend ourselves, and preserve our existence. Destitute of ordinary comforts; deprived of those joys which render existence desirable; struggling with poverty and want; or even shackled within the gloomy walls of a dungeon; life still has its charms, still we cling to it; and it seems to require a total subversion of every prospect of happiness, to render existence odious, and to lead us to self-destruction. A "longing after immortality" has characterized the human race in every age; and that too, not only in reference to a future spiritual state, but in regard even to a conscious condition of the body.

The idea that life might be greatly prolonged, existed in the earliest ages of which we have any record. It may be traced in the annals of every civilized nation down to the present day. The dread of

pain, the fear of death, and the desire to avoid both, are feelings inseparable from man in every condition; visible alike in childhood, manhood, and old age; in the Christian and the infidel; the black slave as well as the white civilian; in the wild untutored savage; and the highly finished scholar and philosopher.

In Egypt, at one period, it was thought that the best means of preserving health and life were frequently to take emetics, and to keep the body in almost a constant state of perspiration. So general was this idea, that it became a custom among the people to address each other with: "How do you sweat?" instead of "How do you do?" The degree of perspiration was supposed to indicate the state or degree of health.

The philosophers of Greece and Rome, in general, endeavored to convince the people that the best and only means of strengthening the body and preserving life, consisted in the judicious use of the various articles necessary for the system; and in the constant exercise of the mental and bodily faculties. Temperance, free and pure air, bathing, daily friction, and gymnastics, were their grand panaceas.

Dr. P. Holland, of England, has translated a work written in verse, about 1099, for the use of William the Conqueror, by John of Milan, entitled *Regimen Sanitatis Salerni*, or "The Regimen of Health," and was the exponent of the Physicians of Salerne, at that time the most celebrated school of medicine in

Europe. Though written seven hundred years ago, it contains about as much useful information on the subjects of Health and Life, as most of the treatises of modern times.

Jesuits, cardinals, and philosophers, from Plutarch down to Sylvester Graham, including Romans, Italians, Venetians, Spaniards, Piedmontese, Austrians, Danes, French and English, have endeavored, by varied and incessant ingenuity, to prolong life. As Dr. Monroe, the celebrated anatomist, declared, there was nothing about the human machine to indicate its decay, and hence a deficiency of chemical and physiological knowledge has always been *felt*—a *desideratum* of some kind has been simultaneously and intuitively acknowledged among all people and all races. Throughout the world, in every heart, has been re echoed the exclamation: "But is it not a dismal thing to die?" There is no disguising the fact that to leave faces familiar and beloved—to descend into the cold and silent tomb, has been universally dreaded, and carefully avoided. All ranks fear it: the poor, the rich, the slave, the savage and the civilized. The whole earth has been ransacked for materials to avoid the consequences of decay. Balsams, powders, pills, tinctures, electricity, galvanism, mesmerism—anything and everything has been tried, lauded, neglected and forgotten. The conclusion is inevitable, *the source of the evil, the primary cause of natural*

death, has hitherto not been discovered, or it has been overlooked.

Chemical investigations have unfolded many important truths, concerning the organic constituents and requirements of the human constitution. The intimate relation of chemical science to physiology and pathological anatomy, can be recognised and fully appreciated by those alone who comprehend and apply its invaluable teachings to every department of individual and domestic life. By it we are enabled to determine what food is legitimately best adapted to organization, development and reproduction; and by it we can rationally ascertain the general causes of material disarrangement, glandular, urinary and bladder diseases, and the phenomenon of structural change, or physical death. The causes of the latter are identical with those physical disturbances which invariably precede the local development of gravel, stone, gout and calculi. Consequently a knowledge of those chemical processes in the vital economy, which ultimate themselves in the disorganization of a tissue, a gland, the porous ramification, or the entire system, is quite indispensable.

When the food is masticated, it passes into the stomach to undergo the process of digestion, and when converted into *chyme*, it enters the upper end of the *pylorus* and into the *duodenum*, or second stomach, and being mixed with the pancreatic juice, is converted into chyle and excrement. The lacteal

vessels absorb the chyle, which is freighted with the produce of the food, and is conveyed by them and emptied into the blood, and this blood it is which coursing along the veins and arteries forms and supplies the body. Everything in the human being is derived from the blood, which is itself the essence of the food taken into the stomach. The philosophy of eating, therefore, is to supply the brain, spinal marrow, nerves, muscles, bones, lungs, liver and other organs, with aliment *appropriate* to each tissue, and no more. But as Dr. Playfair testifies, the principal portion of the general food being graniverous, and a large proportion of that being earthy, and farther, that the blood which flows *from* the heart, through the arteries, contains an amount of solid matter which does not exist in it when returning *to* the heart through the veins, it is certain that this matter must be left in the minute terminations of the arterial vessels. Pathological chemistry seems to point unhesitatingly to this cause for checked perspirations, constipation, gout, stiffness of joints, &c. Morgagni, describing a case of gouty dissection, says :—" On the middle of the right tibia there appeared an oblong tumor, resembling a node, over which the integuments were very thin and ready to burst ; it was a mere deposition of *chalk-like matter* between the skin and periosteum, and, though thick and large, had not as yet done any injury to the bone. One of the great toes was found to be

much enlarged ; and, upon dissection, the first joint of it was found to be inclosed in a bed of *chalky matter* like a *fossil shell ;* but the bone itself was neither increased in size nor altered in its texture."

It is easy to perceive that the chalk-stones and all similar depositions like the above are furnished from the food, which is constitutionally defective in its nutritive elements.

It has already been shown that almost all undistilled drinks contain an undue proportion of earths and salts. These earthy particles are separated to some extent from the blood by the kidneys, and conveyed by the ureters to the bladder. In the bladder although much of the lime and salts held in solution may be passed off with the urine, just as much of the earthy matter in a tea-kettle is thrown off by pouring out water into a tea-pot, yet much is deposited at the bottom of the bladder, as much earthy concretion furs up the tea-kettle. The consequence is to lessen the action of the bladder and kidneys, and less water is taken from the blood. Thus is not only earth, salts, and acids deposited in the bladder, and the kidneys, producing gravel and urinary calculi, but causes pains, weakness in the back and dorsal extremities, inflammations, ulcers, and thinness and wateriness of blood.

So that no mistake can arise as to the nature and results of this earthy concretion in the kidneys and bladder, Willis on Urinary Diseases, says :—"The

situation in which the internal deposition of sedimentary urine takes place, may be said (except in cases where foreign bodies are introduced into the bladder) to be invariably the body and pelvis of the kidney. The natural nuclei of urinary calculi of every description are engendered in the kidney; were there not *something wrong** at the moment the urine is generated, we should never have any larger concretion. Aggregations of these particles are occasionally observed clogging up the tubuli; so that it is not even in the pelvis or receptacle, but in the substance of the kidney itself that the deposition of solid matter takes place, that the first step in the formation of a *stone* is achieved."

When the urinary concretions are small in size, and are passed directly from the kidney through the bladder, they are characterized by the name of gravel; but when they remain long lodged in the pelvis of the kidney, and then enter the ureter, consolidating and enlarging by the law of attraction, they are denominated stone, and in its passage down the ureter

* What Dr. Willis means by "*something wrong*," he does not say, but if the reader will turn to chap. 5, Part I, he will find the following from PARKE'S CHEMICAL CATECHISM:—"If fowls are kept in a state of confinement where they cannot get any calcareous earth, they lay their eggs without shells." Now it must be evident that if no earthy ingredient is put into the body from the mouth, *no lime or aggregations of earth can be engendered anywhere, or under any form, either in the pelvis, or the kidneys or in the bladder.*

causes the strongest man to quiver in agony,* and to become helpless as a child."

Sir. B. C. Brodie thus describes Urinary Calculi in one of its phases :—"*Red sand* is congregated in large masses in the bladder, and it is of great consequence that *we should stop* the formation of this sand, both because it is a considerable evil, and because if neglected it leads to the formation of a larger concretion in the bladder."

Calculi, or earthy concretions, differ very much in their appearance and in their chemical composition, as observed in the human body. They have been the subject of searching and minute analysis, by Drs. Wollaston, Marcet, Prout, Henry, Yellowly, and Sir B. C. Brodie. The following is a summary of the observations of these celebrated chemists as to the composition of the calculi, and earthy concretions of the bladder :—

1. Lithic acid. These calculi are generally of an oval form, and slightly flattened ; of a brownish-red color, approaching to that of mahogany ; rather smooth on the surface, but not polished, except occasionally from friction, when there are two or more calculi in the same bladder. If broken, the lithic acid calculi split into concentric laminæ.

* Of this I have had personal experience, having suffered all and more than the agonies of death during the passage of a stone through the ureter. It was the size of a pea, and afterwards passed off with the urine.

2. Oxalate of lime. Calculi of this kind are also distinguished by the appellation of *mulberry*. These are of a dark-brown color, approaching to black; rough and tuberculated on the surface, very hard, and imperfectly laminated.

3. The triple phosphate of ammonia and magnesia. This salt forms a fragile calculus, and when broken it does not, like the lithic-acid calculus, split into concentric laminæ. The surface of it is uneven, covered with minute crystals.

4. Phosphate of lime. Calculi composed of this substance, unmixed with other calculous matter, are rarely found in the bladder; and when they are, there is reason to suspect, from Dr. Prout's observations, that they have their origin in the secretions of the bladder itself, and not in the urine. These calculi are of a pale-brown color, and of a laminated structure.

5. Although it is rarely that we find a bladder-calculus composed altogether of phosphate of lime, we frequently find this salt existing in combination with the triple phosphate of ammonia and magnesia. This mixed calculus is of a white color; friable; not unlike a mass of chalk in appearance; not in general laminated. It melts into a vitreous substance when exposed to heat in the flame of a blowpipe; and hence it has received the name of the fusible calculus. Neither of the two salts, of which it is composed, (that is, neither the triple phosphate, nor the phosphate of lime,) melt in this manner when exposed to heat singly, although they are so easily fused when in combination with each other.

6. Lithate of ammonia. This variety of calculus is of a clay color; sometimes it is smooth, and at other times tuberculated on its surface: it is composed of concentric layers. Dr. Prout regards it as being almost peculiar to children.

7. Lithate of soda. This is a rare calculus, of a white color, like the chalk-stones of gout, probably formed where the patient, having a lithic-acid diathesis, takes large quantities of soda. I was first informed of the existence of this kind of calculus by Dr. Prout. In our collection of calculi you will see a fine specimen of it, with a deposit of pure lithic acid on its surface: probably there is a nucleus of pure lithic acid also.

8. Cystic oxide. This is a very rare kind of calculus: it is of a white color; and, when broken, it is found (to use Dr. Prout's own words) not to be laminated, but appearing as one mass, confusedly crystallized throughout its substance.

9. Calculi are sometimes composed of carbonate of lime, but these are of very rare occurrence indeed: the carbonate of lime, however, is frequently blended in small quantity with other ingredients.

10. Dr. Marcet has also described a variety of calculus under the name of xanthic oxide; and another under that of the fibrinous calculus.

11. The fibrinous calculus appears to be composed of the fibrine of the blood. I have never met with but one example of it. This was of an oval shape, about the size of a horse-bean, yellow, semi-transparent, not very unlike amber in appearance, but less hard. When dried,

it shrunk to a small size, and became, as it were, shriveled. I found it in the bladder after death, where no disease of the urinary organs had been suspected during life, but where the kidneys were found to have been diseased when the body was examined after death. There can be little doubt that the kidneys had secreted albumen with the urine ; and if we consider how near fibrine and albumen are to each other in their chemical composition, we cannot but suspect the fibrinous calculus to be a deposition from albuminous urine. Unfortunately, in this instance, the chemical properties of the urine had not been examined.

In some cases we find a calculus composed throughout of one of the substances, which have been described, nearly pure ; but at other times we find these substances variously combined with each other. The best mode of examining a calculus is to have it sawn through the center. We then find, that, in some of the compound calculi, the different substances are disposed in layers, the lithic acid distinct from the oxalate of lime ; the oxalate of lime distinct from the triple phosphate, and so on ; while in others they are intimately blended together.

It is only when they are divided in the manner which I have mentioned, that we can learn the true history of the formation of calculi. As Mr. Brande long ago observed, the center or nucleus is generally either lithic acid or oxalate of lime. In many cases, the additions to the calculus are of the same chemical composition with the nucleus ; in other cases, we find the lithic acid deposited on the outside of the oxalate of lime ; and more

rarely, the oxalate of lime is deposited on the surface of the lithic acid. The deposit of lithic acid, or oxalate of lime, may take place in the bladder, where there is no evident disturbance of the general health. If the general health becomes affected, and the bodily powers of the patient are impaired, either from the irritation of the stone in the bladder, or from any other cause, the urine becomes alkaline, and, in consequence, the subsequent additions to the calculus are formed of the triple phosphate of ammonia and magnesia. When the calculus has existed for some time in the bladder, it frequently happens, and indeed it always happens, sooner or later, that the mucous membrane becomes inflamed; and an adhesive, tenacious mucus is secreted, which contains phosphate of lime; and this, being blended with the triple phosphate, constitutes the fusible calculus. Calculi formed in the ducts of the prostate gland, as I shall explain hereafter, are composed of phosphate of lime, pure, or nearly so. But whatever may be the condition of the bladder, it is a very rare occurrence to find a simple phosphate of lime calculus in it. In cases of chronic inflammation of the bladder, the phosphate of lime is deposited by the mucus in small masses, but these nuclei being exposed to the contact of the urine, and the health becoming impaired, as always is the case under these circumstances, the triple phosphate is added to the phosphate of lime, so as to constitute the fusible calculus.

For these latter observations I am indebted to Dr. Prout. He has also furnished us with a knowledge of the following most important and interesting facts in the

history of calculous formations. There are but few cases in which the phosphates form the nucleus of a calculus; but being once deposited, they continue to be so, and are not followed by other depositions. The phosphates may succeed the lithic acid, or the oxalate of lime; but neither of these ever succeed the phosphates. If the external surface of a calculus is composed either of the lithic acid, or of the oxalate of lime, you may be certain that there are no phosphates in the interior; whereas, if there are the phosphates on the outside, the general rule, to which there are but few exceptions, is, that some other substance lies underneath. When a vesical calculus is sawn into two equal parts, the nucleus is seen in the center, the calculous matter being deposited equally, or at least symmetrically, on every side. There are, however, exceptions to this rule, and occasionally we see the nucleus near one surface of the calculus, at a considerable distance from the center. Mr. Cross has explained how this happens. The patient being confined to the recumbent posture, the calculus does not change its place in the bladder, and the fresh deposits take place only on the exposed surface.*

Calculous disorders prevail differently in different classes of society, among individuals of different ages, and in different climates and districts.

The number of cases will depend upon the quantity of solid matter contained in the water and food upon which the inhabitants daily subsist. Since the

* Cross on the Urinary Calculi, p. 13.

Croton water has been introduced into the city of New York, there has not been one case of sand or stone in the bladder, where previously there were ten, and I have known many who were greatly afflicted with gravel who have entirely recovered by drinking the Croton water.

To everybody blessed with eyes and reason, it would seem the most natural thing in the world, that it must be self-evident mankind owe all these EARTHY CONCRETIONS to the Food and Drink. This conclusion is logical and irresistible.

CHAPTER IX.

Continuation of same subject.

From the foregoing chapter, it will be evident, that from the food the blood is made, and from the blood is the whole system repaired, and the seeds of disease sown. Every day we eat impure and earthy food, every day we drink liquid impurities held in solution even in the clearest streams, and the fact necessarily follows, that to this cause must we look for the *origin* of many diseases, especially Gravel and Stone, Bladder, Kidney, Scrofula, Dropsy, Brittle Bones, Rigid Muscles, and Death from Old Age. Well may Benjamin Brodie exclaim, "We must stop the formation of this sand!" But as neither he, nor any others, has traced its commencement to the *Food*, the insufficiency of medical art has been apparent. Names of the most venerated character, men of the most profound attainments in medical science, have never done more in this department than experimentalize upon the *symptoms*, as seen in gravel, gout, and similar appearances. The *Original Causes* have been entirely overlooked. This insufficiency of medical knowledge is the great support of quackery at the present moment. The sick do not easily abandon hope, but readily give credit to *promises* of cure;

and where art and science avail nothing, it is little wonder that patients fly to empirical pretenders, as drowning men catch at straws. We must reach the CAUSE, and the EFFECTS will cease.

HEALTH and DISEASE may be compared to two streams. The sluggish waters of the one scarcely exhibit any motion. Being constantly filled with the grossest impurements, many offensive obstructions and hurtful vapors are generated along its banks. These in time become widely diffused, so that the whole atmosphere becomes loaded with minute but poisoned arrows, which shoot forth Diseases of every character, and ultimately Death. If you trace this stream back, you will find that its source is impure necessarily, BECAUSE THE FOUNTAIN FROM WHICH IT PROCEEDS IS ITSELF THE SOURCE OF CORRUPTION. (The Food and Drink.)

The other stream glides along like a laughing child at play. The waters are clear as crystal. The flowers that line the margin, on either side, are grateful, and as they kiss the stream, an invisible spirit, breathing the sweetest incense, walks forth on the pellucid waters. Everything is rendered beautiful by the presence of the stream. Follow this stream to its source, and you will find it a little rill welling up from the filter of purity.

So it is in the application. If the springs of existence, that is the food, drink and air, be pure and elevated, the stream, or blood, will be transparent

and beautiful. Hence nothing can be more essential than a strict obedience to the physical and organic laws. When these are faithfully observed, the pre-existing conditions are rendered favorable, health and purity do not clog nor rust the hinges of life.

Let the reader seriously remember that in the preceding pages, no attempt has been made to solve the mysteries of Health and Death, either dogmatically, or upon anything like fanciful or theoretical grounds. A plain, straightforward, common sense, practical mode of investigation has been adopted, the result of which has been an unequivocal answer to the question.

Why does Old Age terminate in Death? The answer is summed up in a few words, viz. :—

1st. The body, throughout the whole period of life, is subject to a process of consolidation.

2. This process of consolidation consists in the gradual deposition of earthy substances (principally phosphate and carbonate of lime); by which the various parts become ossified, or converted into matter approaching the nature of bone.

3d. This conversion into bone destroys the flexibility of the vessels, muscles, and other parts subject to motion; renders the blood thick and glutinous, and entirely chokes up the minute or capillary arteries; so that the circulation of the fluids, and the action of the system generally, diminish and terminate in death.

4th.—The introduction into the body of the earthy matter, which by thus accumulating, produces what is called "Natural death," or death from old age, may be so controlled, that active vigorous life may be prolonged at pleasure, and URINARY and KIDNEY DISEASES PREVENTED.

The only means then by which health and life can be secured, consist in first ascertaining the nature and influence of the elements concerned in organization; secondly, learning to detect excess or deficiency in any one or more of these elements; and thirdly, obtaining the knowledge or power to supply when deficient, or abstract them when they superabound. Thus preserving health and life by maintaining an equilibrium of the elements of which the body is essentially composed.

CHAPTER X.

On the Cause of Motion, Secretion, Digestion, &c.; and the Nature and Composition of the Brain and Nervous System.

It has been distinctly ascertained, that every part of the body concerned in motion is penetrated by one or more divisions of the nervous system.

That if any one of these divisions or branches be cut asunder, the part thus separated is no longer capable of motion.

That if the stomach be filled with food, and certain nerves connecting it with the brain be divided, or even tied down, the food will remain unchanged, digestion will cease.

That if the nerves leading to the kidneys, or to the lungs, or to any other part, be similarly divided, the secretion of urine ceases; the process of respiration is suspended, and the functions of every part thus separated disappear.

In cases where the suspension of any function arises from the nerve being pressed down or tied down only, instead of cut asunder, immediately the pressure is removed the function recommences.

These demonstrable facts are quite sufficient to warrant the conclusion that motion, secretion, digestion, and other characteristics of living organised

beings, such as man, *depend upon the brain and nervous system.*

Having ascertained that the brain is the source of power to the body, it becomes a most important question, what is the cause of this power? Before this can be answered, we must first ascertain the differences which exist between the substance of the brain and nerves, and the less or nonsensitive parts of the system. The following table, exhibiting the *average* proportions of substances entering into the composition of bone, muscle, blood and brain will enable us to give this answer with the utmost certainty :—

	Bone.	Muscle or Flesh.	Blood.	Brain.
Gelatine	30	7	0	0
Albumen	0	22	3	7
Ormazome	0	0	2	1.5
Phosphate, Sulphate and Carbonate of Lime; also Sulphates, Muriates and Phosphates of Soda, Potass, Ammonia, &c.	70	2	12	6
White, fatty matter, somewhat like Spermaceti	0	0	0	5
Free Phosphorus	0	0	0	2.5
Water	0	69	83	78
	100	100	100	100

From this table we perceive that the only difference between the composition of the brain and the rest of the body, is the presence of white fat-like matter and phosphorus; but, as the fatty matter is composed of the same elements as the ordinary flesh,

differing only in proportion, we must conclude that the presence of *Phosphorus* alone gives the brain its peculiar properties and activity.

It is also a fact that the proportion and variation of phosphorus in the brain is found to correspond with the differences in the characters through life. Idiots have very little—lively, intelligent persons have much. Throughout the whole animal and vegetable worlds, the degree of susceptibility, sensibility, vitality and power is evidently owing to, and has been found to correspond with, the proportion of phosphorus in their composition.

Since, then, it is such an agent of both intellectual and physical power and vitality, it forms a very important branch of this treatise, to elicit the means of supplying it to the body generally, and the brain particularly, in order to promote the development of each to the greatest extent.

The following table will exhibit the proportions of phosphoric acid in a few articles :—

100,000 parts of

Linseed contain	of	phosphoric acid	880	parts.
Stalks of do.	"	"	118	"
Carrots, (dry)	"	"	395	"
Leaves of do.	"	"	963	"
Lucern	"	"	353	"
Beans,	"	"	292	"
Barley, (dry)	"	"	210	"
Peas	"	"	190	"
Buckwheat	"	"	170	"

100,000 parts of

Beet-root, (dry)	contain of	phosphoric acid	167	parts.
Leaves of do.	"	"	690	"
Parsnip	"	"	111	"
Leaves of do.	"	"	1784	"

It is also found in considerable abundance in the grape, sage, onions, oysters, and shell-fish generally, sugar-cane juice (but not in refined sugars), kidney beans, cloves, pine-apples, turtle, eels, plaice, tripe, and the gelatinous parts of animals, and also in many roots, fruits, leaves, stalks, &c., of vegetables and fruits.

CHAPTER XI.

General Summary and Practical Suggestions.

From the preceding chapters may be gathered the following conclusions :—

1st. That the living human body is a mechanical structure, consisting of elastic, movable solids, vascular branches, porous masses, and circulating fluids.

2d. That these solids and fluids are composed of various organic and inorganic elements—constituting, in fact, a chemical compound :—

The whole unceasingly acted upon and kept in motion by the "Divinity which stirs within us."

3d. If the Blood, as the chief fluid of the system, be unopposed, unobstructed in the vessels and chambers which contain it, simple, *mechanical* change, or "circulation," is produced. If, however, resistance is offered in the vessels, and either the whole or a part of the blood becomes nearly or entirely stationary, then *chemical* change, or *decomposition*, constituting disease in various forms, especially Bladder, and Urethra, is the result.

Illustrations.—If the materials for making ale or wine be kept in constant motion, *mechanically*, no chemical change, or *fermentation*, will take place.

The same in making bread. The flour, water,

yeast, &c., will not ferment, no *chemical* change will be produced, if the whole be kept in a state of agitation, or *mechanical* change.

Water, although confined in vessels, if kept in constant motion, will remain pure; but when allowed to be at rest, putridity, or decomposition, soon occurs. Brooks and rivulets preserve their sweetness, whilst stagnant waters quickly become subject to decay, or *chemical change.*

So it is with the body. As long as the fluids *circulate freely*, or move *mechanically*, no decay, or *chemical* change can occur; but the moment obstruction takes place, and the blood stagnates, decomposition commences, the degree and rapidity of which indicate the extent and severity of the *consequent* disease!

"*It cannot be told in fewer words, than that* HEALTH *is a free circulation, and that Sickness is an obstructed circulation of the blood.*"—*Harvey, the Discoverer of the Circulation.*

4th. The comparative fixidity and rest of the solid parts of the body, render them subject to chemical change, or decomposition—constituting their decay, or waste of the system.

5th. The free mechanical motion or "circulation" of the blood, throughout and among the solids, is essentially necessary to the supply of new matter, that the wasted or diminished parts may be restored. *This constitutes in full the process of nutrition.*

6th. The blood thus depositing in its course the elements of restoration and renewal, necessarily requires, for a continuation of this process, to be recharged with nutritious matter.

7th. This re-supply of nutriment is derived from food. Hence alone, the necessity for eating and drinking. If the body were not subject to chemical change or decay, no food or drink would be required to preserve its identity!

8th. Different kinds of food possess different properties. Some are lightly, others heavily charged with earthy substances; which, depositing in the tissues, fibers, and vessels of the body, render them rigid and resisting; obstruct the circulation of the blood, create disease, produce the infirmities of old age, decrepitude, and finally result in that solid, choked-up, immovable, insensitive state, called "Natural Death."

Illustrations.—The waters of different springs and rivers hold in solution different proportions of earthy and saline matters, and the vessels in which these waters are boiled and evaporated become more or less incrusted or "furred-up;" the degree and extent of incrustation being in proportion to the amount of solid matter held in solution.

Different kinds of coal, wood, or other fuel, contain different proportions of inorganic elements; and after combustion, leave different quantities of ashes.

So it is with the food of man. The proportion of

inorganic elements in general, but of earthy matters in particular, is exceedingly various, and tends, correspondingly, to the consolidation and inactivity of the body.

So again, some kinds of food are more liable to chemical change or decomposition than others. Hence it is that articles of diet differ in value.

Illustrations.—Some kinds of fuel burn away, or decompose, much more rapidly than others. One kind of coal, for instance, is much "swifter" than another. Oak wood again will not burn so quickly as pine, and other light timber.

Different fluids ferment and decay, with different degrees of rapidity. Sugar and water, flour and water, and different vegetable decoctions, quickly decompose, and form vinegar and other products; whilst solutions of animal and vegetable matter impregnated with different acids, minerals, earths, and neutral salts, will preserve their condition for various lengthy periods.

So with food. Some kinds decompose, and pass away much sooner than others. The substances which resist chemical change, and preserve their identity in the body for the longest period, are the most valuable as food, the most conducive to health and activity, destroy the necessity of eating and drinking for the longest period, and thus prove the most economical in the end, whatever might have been their original cost. (See Table of Digestion.)

9th. The direct cause of obstruction is the presence of earthy, inorganic matter, deposited in the system by the blood, and derived originally from the food and drink.

10th. The cause for the *necessity* for the food and drink, is the constant decay or decomposition of the system; the extent and rapidity of which depends solely upon the composition of the body as a whole—*upon the degree of resistance it offers to chemical change.*

Here then, at present, is the termination of my investigations into, and observations of, the grand secret to preserve health, activity, and life, almost at pleasure! That secret, which the philosophers of all ages have sought in vain to discover, and which was the object of all which ancient fictions fabled of, and the end of all the "*Magic Mixtures and Elixirs Vitæ!*" A few words will express this secret, and embody the substance of many years' anxious labor and investigation. Check the waste or decomposition of the body, and thus diminish the *necessity* for eating and drinking! In proportion as this can be done, the deposition of earthy substances in the body, the consequence of obstruction to the circulation of the blood, and liability to disease, decrepitude and death will be prevented!

There is no law of nature which limits the period of human life! On the contrary, disease and death

are *consequences* of *violated* natural laws! Health and Life, so far as the physical structure is concerned, are placed pretty much in our own keeping; and in this respect ignorance is the curse of mankind. The wise man hath said, "Seek not death in the error of your life; and pull not upon yourselves destruction with the works of your hands."

"Fools die for want of wisdom."

AUTHORITATIVE PROOFS.

We find the human system composed in the fœtus almost entirely of a soft gelatinous substance. It is born, and gradually acquires more and more consistency—it grows cartilaginous—its structure becomes firmer—its functions more powerfully exercised—its system better developed. At length the child becomes a strong man, with a polished and unyielding frame of marble; the bones are formed chiefly of solid lime, 64 per cent., and flint and iron are found in the blood. Whence came all these solid substances? They were not born with it—but grew with it—formed after the being was complete—*after* the soft parts and not before—they grew with its growth and increased with its strength. There is only one inlet to the system by which they must have entered—the stomach, and been taken up by the tiny absorbents.—*Dr. O. Gregory.*

"Were the physical condition of man always perfect and the mental state always that of enjoyment, the duration of life would always be extended to the utmost limit compatible with the organization of the human body. But as this fortunate concurrence seldom or never happens, human life seldom or never numbers the full measure of its days.

"An advanced term of life and decrepitude are commonly conceived to be synonymous; the extension of life is vulgarly supposed to be the protraction of the period of infirmity and suffering. But this is so far from being true that it is not within the compass of human power to protract, in any sensible degree, the period of old age properly so called. But though when fully come the term of old age cannot be extended, the coming of THE TERM MAY BE POSTPONED. To the preceding stage an indefinite number of years may be added. And this is a fact of the deepest interest to human nature.

"In all places under all circumstances at a given time, though not precisely at the same time in all climates and under all modes of life, infancy passes into childhood, childhood into boyhood, boyhood into adolescence, and adolescence into manhood. At 34 years of age every adult man will have acquired his highest state of physical perfection. But at what period will this state of physical perfection decline? What is the maximum time during which it can retain its full vigor? Is that maximum fixed? Is there a certain number of years in which by an inevitable law every adult man necessarily becomes an old man?"—*Dr. Southwood Smith.*

"There is a lack of philosophy and reason in attempting to prove by a few rare examples that either vegetable or animal food is to be used to the entire exclusion of the other; and to prove that all men need but little food from a few cases of extreme abstinence. Cornaro is the standard now-a-days—the mirror by which every man's nature is to be reflected—the great exemplar which every man is to imitate. Lewis Cornaro was a Venetian nobleman, who by dissipation and debauchery, at an early age ruined his health and broke down his constitution; but by the advice of his physicians he reduced his diet to twelve ounces of solid food and about a pint of wine per day. This change had a most happy effect upon the debauchee, as it has at the present day, and will ever have on all who undermine their health and the strength of their system by the same course of dissipation. Cornaro lived to be almost a hundred years old, and the conclusion is, by those who use the scales and weights, that every body should live as Cornaro lived after he reformed; and so indeed they should, if they had previously lived as he did, with the same unhappy effect upon his health. This mode of reasoning is

but taking the exception for the rule itself; and by it we may prove any thing, and make of a single isolated fact, a general principle universal in its application. Red Jacket, the famous chief of the Seneca Indians, lived chiefly as the other nations of the forest do, on game, and exposed to all the vicissitudes and inclemencies of our variable climate. He attained almost as great an age as Cornaro did, and yet during the last fifty years of his life he was almost daily intoxicated. Does this prove that we should imitate Red Jacket, in order to live to a good old age?"—*Ticknor's Philosophy of Living.*

"You will understand, Gentlemen, from the observations which I have now had the honor of addressing to you that in selecting the medical profession you have set yourselves no very easy task. The study of medicine is, indeed, an arduous undertaking. The most comprehensive mind, and the greatest industry, might find occupation for many years in acquiring the whole circle of medical knowledge; you will have reason to lament that you cannot employ a longer time in the preliminary studies which are necessary as a qualification for *practice*, and the active duties of your profession; and you will therefore see the necessity of improving, with the greatest diligence, the opportunities of information that you now possess, and which you will never be able to recall. Let me observe, at the same time, that among all the various objects which can engage the human mind, there is no better exercise of the intellectual faculties, no more attractive and interesting pursuit, than the study of the medical profession; while its practice has the most salutary moral tendency of repressing selfishness, calling forth and strengthening all the benevolent and social feelings. Our studies embrace all the most interesting parts of natural knowledge. Our first and immediate object is to learn the construction of our own frame, THE MEANS BY WHICH WE LIVE, AND MOVE, and have our being: we see the nature and operation of ALL those influences by which health is interrupted and restored, by which means disease and suffering may be averted. CHEMISTRY, natural philosophy, and natural history, auxiliary sciences, are more or less immediately connected with the primary objects of our pursuits. Thus we are led to the contemplation and study of nature, and the investigation of truth. We are not called upon to defend any doctrines or systems, or to uphold any set of opinions. We have no interest at variance with those of the community. In professional intercourse with our fellow-creatures, we are known only as instruments of good; in restoring or securing health, the greatest of blessings; in removing pain and sickness, the greatest of evils; in soothing the anguish and quieting the alarm which friends and relations feel for each other; in protracting the approach of that awful moment, from which we all shrink back with instinctive dread—the termination of existence. The happiness or misery of life, and the very question of life or death, often hang on our decisions. I trust that, bearing in mind the serious nature of those duties, you will be anxious to employ the short period of your studies to the greatest advantage, and allow no opportunity of gaining knowledge to pass unimproved; you will thus become respected members of an honorable profession, and prepare for yourselves, in the decline of life, the sweetest of all rewards, the retrospect of labors devoted to the good of others."—*Dr. Lawrence's Lecture delivered at St. Bartholomew's Hospital, London.*

"Cartilage has been examined with very considerable precision, and found to be in every respect coagulated albumen, and alike capable of being converted into gelatine. This cartilaginous substance is the portion from which *bone* is formed; hence the reason, why they are so soft in young children,—AFTERWARDS *the phosphate of lime is* GRADUALLY *deposited, to give the bone its requisite firmness.*"—*Hatchett.*

"As before shown, the blood contains phosphate of lime: when it contains a *surplus*, or *more* than is absorbed or taken up by the blood, for the supply *required* for the general fluids and organs of the system, ossifications are sometimes formed near the heart, or in the coronary artery, and likewise in other parts of the body: these formations are *phospate* and *carbonate* of *lime.* The formation on the internal coats of an artery, *lessens its calibre,* and as

nerves are intimately connected with arteries, and blood is thrown through arteries in volumes from the heart, at every pulsation, by the force of the volume of blood the artery is slightly enlarged, and by passing through that portion of the artery where this ossification exists, its distention would be so great as to produce a quick, sharp pain, similar to that of a knife."—*James Johnson, M.D., Editor of the Medico-Chirurgical Journal,* 1819.

"From what has been now said, you will be convinced that much time and labor will be required for the acquisition of such a variety of knowledge, and after all it can be but imperfectly attained. I say this after more than thirty years' acquaintance with the subject; every day serves more and more to convince me of the imperfection of our art. There are a great number of diseases that we do not understand sufficiently, and many more that we cannot cure. This ought not, however, to discourage us; it ought rather to incite us to greater exertion, which will not go unrewarded, for the science of medicine is progressive and is making daily strides towards perfection. When it shall have abandoned mystery and mercenary views, (the only objects with which it appears at present to be pursued,) it may be expected to keep pace with other sciences, and become as liberal, as it is unquestionably useful to mankind. In the mean time it is not to be doubted, that the insufficiency of the medical art is the great support of quackery at present. The sick do not easily abandon hope, but readily give credit to promises of cure; and where art and science avail nothing, it is little to be wondered at that patients fly to empirical pretenders, as drowning men catch at straws."—*Dr. Clutterbuck's Lectures on the Practice and Theory of Medicine.* (*See Lancet.*)

"Ingenious System of Adulteration.—A very singular instance of fraudulent ingenuity has just been detected, in connexion with the manufacture of isinglass, an article very extensively used by brewers and distillers for refining liquors, in preparing invalid's food, and in the preparation of jellies, blancmange, &c. The manufacture of isinglass in this country, consists of merely rolling out the raw material into thin sheets, and cutting them into fine shreds. Previous to the latter process, however, the ingenuity alluded to has been practised by inserting a sheet of common gelatine (an extract from hoofs, bones, &c., manufactured in the same manner,) between two sheets of isinglass, and uniting the whole by a heavy pressure of the steam-engine rollers. Isinglass costing 18s. per pound, and gelatine not being worth more than fifteen pence, it is supposed that an extensive gain has been made by the adulteration. The management of the fraud is so ingenious, that it is by no means easy of detection, and very careful examination is necessary to discover the imposition."—*Dublin Paper.*

How Many Creatures a Man of Seventy has Eaten—A Cockerian correspondent of the Gateshead Observer has calculated what a man might consume, on an average, in 70 years. "Taking 10 years off for infancy—which is too much."—Yes, far "too much"—Mamma's darling Jacky, as papa knows to his cost, is carnivorous long before the completion of his tenth year; but "taking ten years off for infancy," although "it is too much," and allowing a man four pounds of flesh meat per week, (too little for an alderman, but more than a burgess can get hold of,) the consumption, at the close of three score years and ten, amounts, according to "our own" Cocker, to 12,480 lbs., or 899 1-2st.; or to 256 sheep, of 80 lbs. each, or 20 bullocks of 44 1-2st.; or to take it still another way, to 78 sheep and 10 bullocks, "with 5st. over," which may stand for fish, poultry, &c., "says 10 of each in the year," or "1,200 poultry, 1,200 fish." But "if we take it in shrimp and shell fish," (and "all is fish" that comes to our correspondent's net,) "heaven only knows what animal life is destroyed to keep up the life of that one animal man."

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